AUGUST
1951

This Issue:

TOP TOPICS
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s — pages 23-25

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To Zone
or
Not To Zone

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ow to Silence
Brake Squeal

★

Padding
The Service
Won't Pad
Revenues

★

Alumni
Football
Specials

★

The Needle
Tells
The Story

★

Servicing
Engines With
Sleeves

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BUS TRANSPORTATION

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Designed by L. J. Fageol, especially for military service, these are multi-purpose vehicles which will be used as buses, cargo trucks or high capacity field ambulances. Each vehicle may also be divided into sections for simultaneous use in all three types of service.

Because of recent plant expansions and the mass production of "Convertible" bodies in cooperation with the Fruehauf Trailer Co., the Army order is being handled without interference with Twin's normal production. We are in position to accept orders from our transit industry customers and will welcome an opportunity to demonstrate on your property.

A-4321

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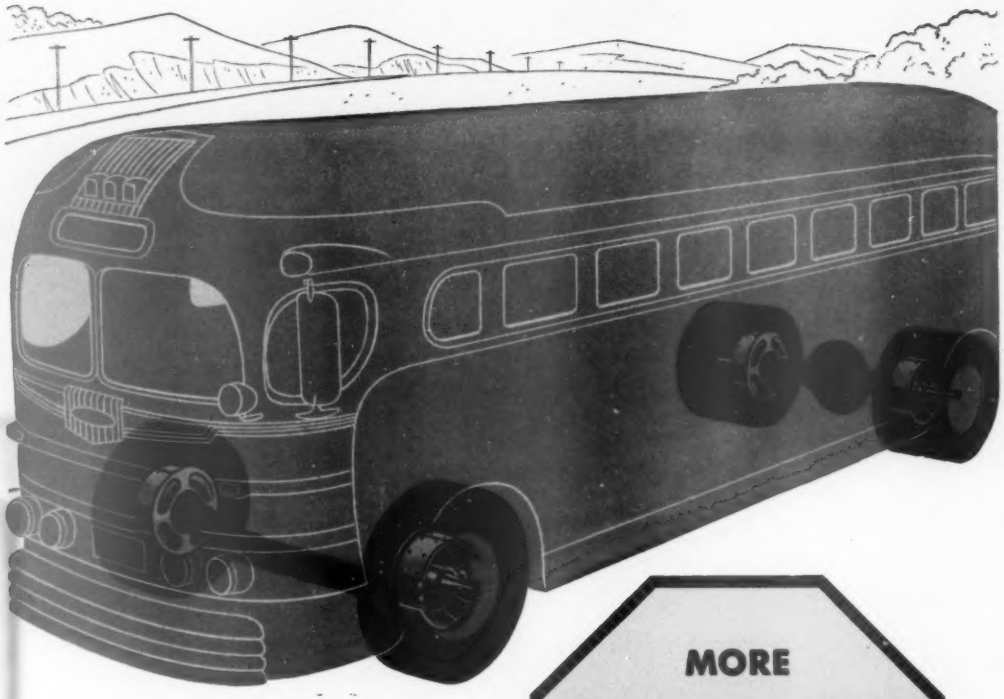
KENT, OHIO



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In This Issue . . .

• Publication in the July issue of the first of a series of articles on the question of zone fares has already aroused considerable interest throughout the transit industry. The second article reports on some of the salient features of zone operations already in existence in certain cities. Be sure to read it.....p. 27

• Intercity carriers generally are becoming more "charter minded," but there is still one potentially rich source of extra revenues that has been neglected. Every intercity traffic manager should read the article on The Alumni Football Special....p. 40

• The problem of brake squeal is an old one, and all too frequently in the past it has been approached from the standpoint of alleviating the squeal rather than elimination of the condition which causes. Here's an article which hits the nail on the head..p. 34

Next Month . . .

• Keep your eye peeled for the September Convention Issue. If there's any basic bus industry problem which won't be discussed, we don't know what it is. And the discussion will be conducted by a panel of top level transit and intercity executives. The issue will be packed with solid industry thinking.

BUS TRANSPORTATION

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BUS TRANSPORTATION
(With which is consolidated Bus Age)

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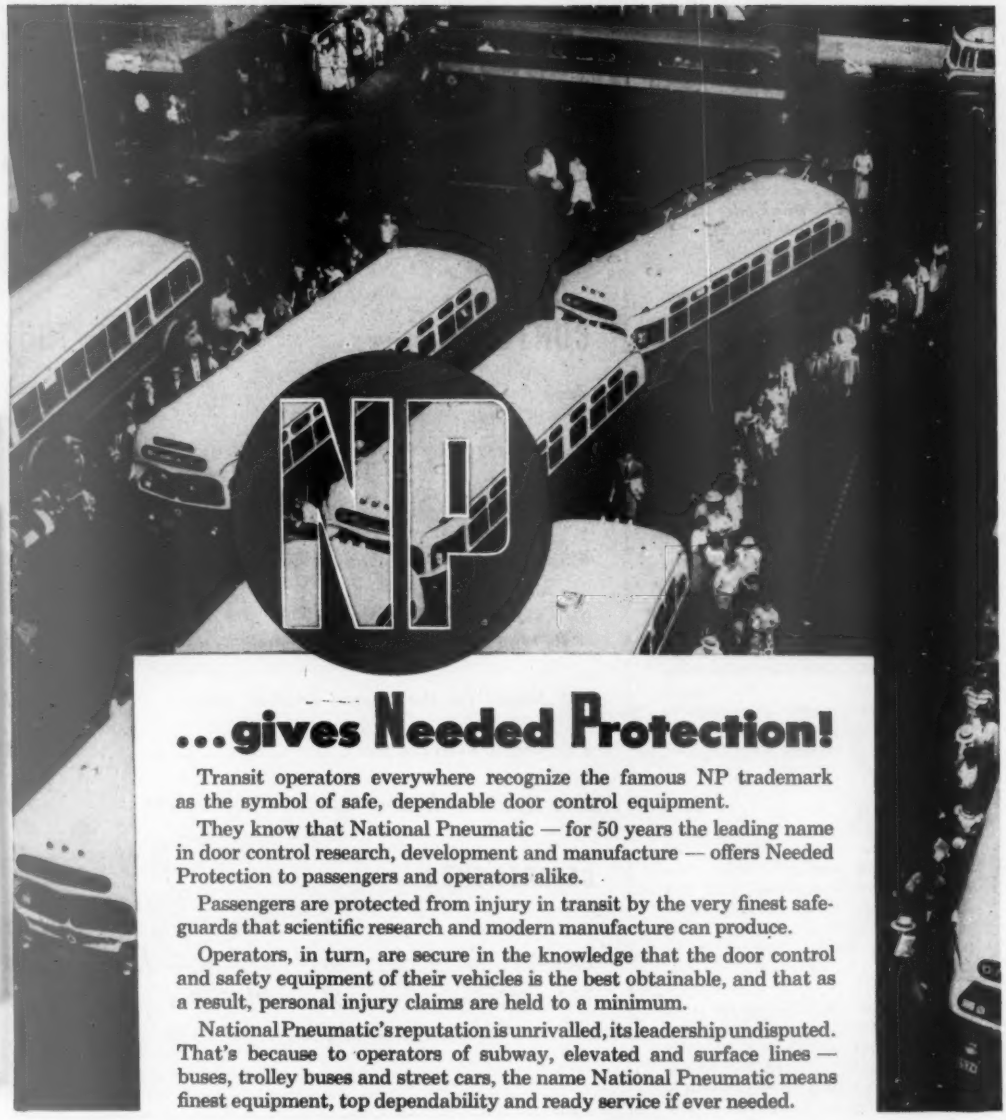

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MOTOR OIL cleans
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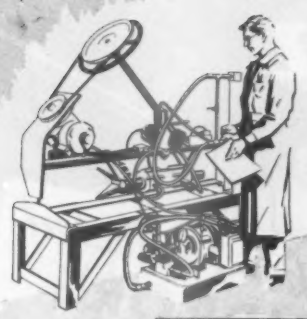

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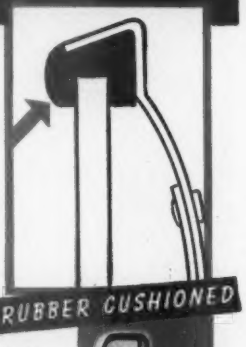

DIETZ No. 73 Mirror Braces available for vibrationless installation

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Dietz Rubber Protected Mirror Heads are circled by heavy rims of tough, live rubber which effectively guard the mirrors from dangerous impact and shock. In good-looking grey enamel finish, swivel ball stud mounting, with replaceable glass.

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Definitely, this country should be putting more dependence on the *multi-passenger* efficiency of electric public transit vehicles. Remember—*one trolley coach* carries as many people as *fifty* automobiles. Let's have more *modern* trolley coaches, like those . . .

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84 AVAILABLE for Daily Service

in Shreveport, La.

ELECTRIC TROLLEY COACHES • Now Serving 56 U. S. and Canadian Cities

● Look at the history of trolley coaches in Shreveport, La. and you see a practical story of trolley coach durability and long service life.

Shreveport, located near that busy corner of the Southwest where the states of Arkansas, Louisiana and Texas meet, started using trolley coaches in 1931. Of the original seven coaches, purchased in 1931 and 1932 by Shreveport Railways Company, all but one are still available for service. No. 107, for example, pictured on the opposite page, began operating in 1932 and has traveled more than 612,000 miles. Larger coaches, bought in 1936, have more than 900,000 miles to their credit.

Shreveport learned during World War II that its trolley coaches would hold up under the strain imposed by material shortages and extra-heavy riding. Today it has 84 coaches and every one of them is ready for daily service, if needed.

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107

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HIGH FLANGE
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and Missouri

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C. D. BECK & COMPANY, INC., SIDNEY, OHIO, U.S.A.

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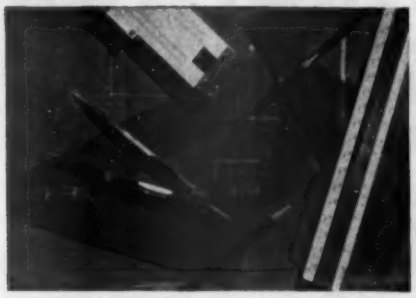
Not Just Drawing-Board Theory



. . . But Proven Safety

Permanent, rattlefree, weathertight . . . husky, welded construction . . . rust-proof beauty.

In an emergency, this young lady would provide herself with a quick, foolproof exit by sharply thrusting against the Edwards Forceout Sash—just as hundreds of passengers have done in actual accidents.

EDWARDS SASH

Regardless of the type of bus or service—city, suburban, interurban or cross country—there's an Edwards Sash to fit exactly the requirement. Streamlined construction . . . quick, easy, glass replacement . . . less service, lower maintenance . . . rattle-free, weather-tight fit . . . fingertip opening and closing, and maximum visibility are among the outstanding features of all Edwards Sash. Leading bus builders standardize on it. Profit-minded operators specify it. Write for complete information.

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Give longer gap life which contributes to lower service costs by requiring regapping less often.

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Especially suitable for the most severe bus and truck operation.

NO WONDER more and more of America's top fleets are switching exclusively to Auto-Lite Transport Spark Plugs. This rugged heavy-duty plug delivers lowest cost per mile of spark plug operation. Suitable for both LP and conventional fuel.

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Toledo 1, Ohio *Merchandising Division* Toronto, Ontario

SPORT SPARK PLUGS

deliver the goods

You're Always Right With Auto-Lite

Summer driving calls for greater tire care

When highways are hot enough to cook your goose—profit-wise, that's the time to double-check your fleet tire-air service. Keep your fleet operating at top efficiency on certified accurate air pressures protected by quality Schrader Caps and Cores... backed by the dependability and precision of Schrader Valves and Gauges, and inflating equipment.

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Schrader Air Service Specialists know the answers to hot weather driving—and can show you how special Schrader Valve Cores, Caps and Gauges can help overcome tire problems of summer trucking. Check with your supplier, he has the information you'll want. *And . . . always specify Schrader Products.*

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FIRST NAME IN TIRE VALVES

FOR ORIGINAL EQUIPMENT AND REPLACEMENT

WHEN A $693,000,000 INVESTMENT* RIDES ON WHEELS ONLY THE BEST BRAKES ARE GOOD ENOUGH!

*The bus business is *big* business today—an industry worth more than $693,000,000. Therefore, it's only natural that America's bus operators protect their passengers and investment with the world's safest power-to-stop—dependable, economical Bendix-Westinghouse Air Brakes.

THE BEST BRAKE IS AIR

BENDIX-WESTINGHOUSE AIR BRAKES
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THE BEST AIR BRAKE IS Bendix-Westinghouse

BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKE COMPANY
ELYRIA, OHIO

To take a bite out of belt costs

Put "teeth" in your drives with the DAYTON COG-BELT*

Only the patented and exclusive Dayton Cog-Belt, of all the fan belts made, is scientifically built to bend like your finger as it goes round fan, generator, or compressor pulleys. Space between the individual cogs takes up compression strain and distortion, gives a cooler, more flexible, longer-lived drive. Here's the proof . . .

An 800-cab taxi fleet in a big Eastern city reports cutting fan belt costs 66% with Dayton Cogs! A large transit fleet reports an average of 15,000 more miles per fan belt! A school bus fleet got 21,964 *extra* service miles on its run!

How long can your fleet *afford* to pass up automotive belt savings like these? To take your first big bite out of belt costs, call the Dayton Jobber. Ask him about his complete fleet program of money-saving, cooling system maintenance, built round the Dayton Cog-Belt. Or write:

GET IT FROM YOUR JOBBER

DAYTON RUBBER CO.
DAYTON 1, OHIO

Cog-Belts and Radiator Hose by

Dayton Rubber

WORLD'S LARGEST MANUFACTURER OF V-BELTS

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Ace-High Performance!

Sealed Power
MD-50 STEEL OIL RING
The only ring with the FULL-FLOW SPRING
Controls oil even in
BADLY TAPERED
and
OUT-OF-ROUND BORES

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CHROME-FACED RING
For Triple Mileage
Successfully fights
ABRASION, FRICTION,
CORROSION, HEAT

SEE IT FROM YOUR JOBBER

Sealed Power Piston Rings

BEST IN NEW BUSES! BEST IN OLD BUSES!

Here's what Operators say about the WHITE DIESEL coach

"Easy steering makes it safer"

"Smoother riding"

"Best get-away . . . easiest handling"

"No smoke, no smell . . . absolutely no fumes"

"I could make a faster schedule with this bus"

"Wonderful driver vision . . . less vibration"

"Steers easier than my passenger car"

"Passengers report rear seat cool—no engine heat"

"Best riding coach on the street today"

"Really designed for the driver"

Have you seen it? The new survey "Facts About DIESEL ECONOMY for the Transit Industry". Ask your White Representative for a copy. Or write . . .

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1455 E. 185th St., Cleveland 10, Ohio

White BUSSES

THE SYMBOL OF SERVICE IN THE BUS INDUSTRY . . . NATIONWIDE!

BUS TRANSPORTATION

TOP TOPICS

HIGHLIGHTS OF LAST MINUTE DEVELOPMENTS IN THE BUS INDUSTRY AS WE GO TO PRESS

August, 1951

A NEW CEILING PRICE REGULATION covering tire mileage service was announced by the Office of Price Stabilization on the first of this month. Under the new rule, effective Aug. 6, the supplier of tires to bus operators will determine his ceiling price individually for each of his customers by reference to contracts in effect during the period Dec. 19, 1950-Jan. 25, 1951, but must adjust prices to reflect subsequent fluctuations in the cost of rubber, rayon and cotton. Ceilings for new accounts will be set in line with prices for similar accounts. The seller must also observe such contract adjustments as bonuses for high mileage and disposal of tires at the termination of contracts.

OFFICE OF PRICE STABILIZATION HAS PROTESTED A FARE HIKE which was proposed for 11 railroads. The agency filed with the ICC its opinion that the proposed increases in commuter fares would be "unreasonable and discriminatory," and, further, inflationary. All the railroads are in the northeast. Thus does OPS enter the fare picture for rails, and, by extension, for bus companies, too.

LOOK FOR DIESEL FUEL TO GO UP IN PRICE. It's the old story of supply and demand. More and more buses, locomotives, trucks, boats and tractors are switching to diesel, but at the same time less and less of the petroleum supply will go for diesel fuel. Reason: growing military needs for jet fuel and gasoline will cut into diesel fuel production. And, in case of hot war, the Navy would have to have a lot of it.

HIGHER TAXES--IN KEEPING WITH THE SPIRIT OF THE TIMES--have come to bus operators in a number of states in recent months. Idaho and New York legislatures imposed mileage taxes on buses and trucks, varying according to the gross weight. Changes were made in registration fees in 10 states--Illinois, Michigan, Montana, New York, North Dakota, Ohio, Utah, Vermont, Washington and West Virginia. Most of the fees, as might be expected, were revised upward.

THE PARKING PROBLEM in all its ramifications is to be studied by the Highway Research Board of the National Academy of Sciences. The survey, which will be made over a two year period, is being financed by the petroleum and automotive industries,

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which will spend $75,000 to find the effect of offstreet parking on downtown property values, on how parking affects city congestion, and whether and how sufficient offstreet parking can be provided.

THE BIG MIDWEST FLOOD COST $1.5 MILLION in damage to highway facilities. Defense Transport Administration officials, studying effects of the flood, found that 39 over-the-road motor carriers, 13 local carriers and two freight forwarding companies were flooded out of their terminals in the Kansas City area. Worst hurt were the railroads, whose loss in freight car days was put in the millions of dollars.

NAMBO AND ATA CONVENTIONS ARE NEARING, and program committees of both associations are finalizing plans. Due to be discussed: emergency controls and regulations; wage stabilization; the manpower situation; and priorities and allocations. Dates: NAMBO, Sept. 12-14, in Chicago's Drake Hotel. ATA, Oct. 1-4, at the Netherlands Plaza in Cincinnati.

CAPITAL TRANSIT'S PROPOSED FOUR-FOR-ONE STOCK SPLIT WAS OKAYED BY ICC, seven months after stockholders had voted for the move (Jan. B.T., page 61). In an effort to increase the marketability of the stock, the company now may issue four shares of $25 par value for each share of $100 par value stock outstanding. Thus the total capital stock value of $24 million will not be changed.

AUTHORIZATION CAME despite the adverse report of two ICC examiners who said that the plan might "enhance the opportunities of present stockholders to dispose of some or all of their holdings at a profit, but it would not tend to promote stability in the market price of the stock."

SALES UP, EARNINGS DOWN is the GM picture in brief. Officials gave these reasons: "This year's earnings (for the first six months), both in amount and as a percentage of sales, when compared with 1950, show the effect of the lower volume of passenger car sales, higher taxes and higher material and labor costs, without compensating price increases. They reflect as well the lower margin of profit realized in defense work." The figures: first six months this year--$3.88 billion sales, $280 million profit. Last year--$3.60 billion sales (eight per cent lower), $485 million net (58 per cent higher).

ACF-BRILL MOTORS CO. President C. W. Perelle has announced the appointment of the following vice presidents: Turner A. Duncan, government contracts; C. F. Hoell, finance and treasury; F. W. Kately, engineering; Williams Nelson, Hall-Scott Division and assistant to the president; C. A. Sharpe, operations. W. J. Beatty and F. E. Dayes will continue in their positions as vice presidents, sales.

NET INCOME BEFORE INCOME TAXES OF $1,262,227 for the first half of the year has been reported by Philadelphia Transportation

Co. The figure compares with a net before taxes of $236,-980 for the first six months of 1950, and it's the best earnings record the company has posted for the first half of any year since the war year of 1945. A large part of the high net was earned during the second quarter, when the full effect of a fare rise granted in February was felt.

NEW YORK'S BIG PORT AUTHORITY BUS TERMINAL welcomed another and a different sort of tenant early this month when a supermarket run by Food Fair Stores, Inc., moved in. The new concessionaire will cater to commuters, make it a little easier for them to bring home the bacon.

THE EXCELLENCE OF ITS ANNUAL REPORT WON FOR CAPITAL TRANSIT CO. the "Highest Merit Award" bestowed annually by the publication Financial World.

SUBURBAN COACH CO. HAS BEEN SOLD. Buyer: Metropolitan Transit Co., a newly-formed subsidiary of Atlanta Transit Co. Probable price: more than $200,000. In the package with Suburban goes its offspring, De Kalb Suburban Lines, Inc. Prior to the sale the two companies, of which J. C. Steinmetz was president, had been strikebound. Strikers voted to accept the settlement proposed by Atlanta Transit. Temporary officers of Metropolitan Transit are John H. Boman, president; Henry H. Ware, Jr., vice president; R. W. Crenshaw, Jr., secretary; and Robert L. Marchman, treasurer.

A TRANSIT ADVISORY COMMISSION to coordinate New York City's privately owned bus and taxi services and the city-owned transportation system has been recommended to Mayor Impellitteri by his special transit committee. As visualized, the commission would consist of seven unpaid private citizens. Theodore Kheel, impartial chairman of the private bus industry in the city, said the commission would give New York a united, overall transportation policy. Some observers, however, saw in the suggestion a plan to push through a fare rise, on the recommendation of the commission, while at the same time keeping the onus off the city's politicians.

VIRGINIA'S PUBLIC UTILITIES LABOR RELATIONS ACT HAS BEEN TESTED and not found wanting. A special federal court has dismissed a suit brought by union ferry workers on constitutional grounds. After negotiations for a new contract had failed, the ferry workers had walked off their jobs less than five weeks after giving notice, in violation of the law.

DEFENSE TRANSPORT ADMINISTRATION BOSS JAMES K. KNUDSON has been added to the Manpower Policy Committee by Office of Defense Mobilization Director C. E. Wilson. Duties of the committee are to advise the ODM director on manpower problems and to review federal manpower policies, plans, programs and proposed laws, orders and regulations. Knudson joins a committee on which are serving representatives of several government departments and emergency-created agencies.

A New Concept...

State Associations Can Aid In Selling Higher Fares

EXAMPLES ARE RARE in which any large number of state bus associations concern themselves with anything more than legislative matters as they affect member carriers. Important as this field is to the carriers, many associations are still neglecting the equally (or more) important problems connected with "selling" bus transportation to the public.

There is still widespread failure on the part of many carriers to recognize the potential value to themselves of cooperative programs, carried out through their state associations, in connection with fare increase applications, promotion and merchandising of the bus ride, and the many other problems which face bus operators today.

When a state association does bestir itself in this respect, it is worthy of mention and commendation. A case in point is the New Jersey Motor Bus Association, which is finalizing plans for a cooperative two-point public relations program in connection with applications for fare increases by many of its member carriers in city and suburban service in a number of communities in the North Jersey area.

In most of these instances, the basic fare is under ten cents. These carriers are now preparing applications to the State Board of Public Utility Commissioners for increases in basic fares to the ten cent level.

The first step in the New Jersey Motor Bus Association cooperative program is designed to enlist municipal officials in active support of the proposed fare increases in the communities involved. This phase of the program will go into effect simultaneously with the presentation of the rate increase applications to the regulatory commission.

The second stage of the program, aimed directly at the people in the communities, will be designed to engender widespread acceptance of the increased fares once they are authorized. This phase will be developed along the lines of a direct sales and promotion campaign.

Here, for the first time, is concrete evidence in support of BUS TRANSPORTATION'S long-standing contention that state associations can be organized to help their member transit carriers solve some of the vital problems facing them today in the important fields of fares and ride merchandising. Other avenues of approach could include the vital problems in connection with regulatory matters, local taxes, traffic congestion, and reduction of service along routes no longer providing revenues to pay for the cost of service.

State bus associations which place sole or primary emphasis on legislative programs no longer can justify their existence. The principal problems of bus companies today, particularly transit carriers, rest firmly on the local level, and involve the views, beliefs, prejudices and pocketbooks of the people in each community. That's where the fight must be waged, and individual carriers will be better able to accomplish their objectives if they have the full and active support of their state association. THE EDITORS

This is the second in a series of editorial discussions of the controversial zone fare question in the transit industry. They are designed to focus attention on the all-important problem of the steadily diminishing volume of riding and its consequent effect on the financial condition of the transit industry.

To Zone or Not to Zone . . .

The Zone Fare Systems In Use Today

By Frank Kane
Managing Editor

- ***The problems involved in the planning of city-suburban zone systems are many and diverse.***
- ***Geographical contour of the area, the radius of the central zone and depths of the outer zones, the basic zone fare and extra zone fare increments, all have to be considered.***
- ***This is basically a report on some of the salient operating features of zone systems already in existence in certain cities.***

● THE TYPE OF zone system most suitable to any given transit operation depends, among other things, on the geographical layout of the community, present routes, and present riding characteristics. Generally speaking, however, it probably could be said that the "Central Zone" type of system, with the central zone in a roughly circular shape, could be adapted to a majority of the communities in this country. The few communities which would prove to be the exception could be zoned in accordance with the deviations from the norm.

Seattle, for instance, is one city which falls under the latter category. Investigations into the problem of zoning are already under way in that city. Shaped roughly in the form of an hourglass, Seattle obviously could not be zoned to conform to the circular type of central zone system. The plan which is now receiving the most study in Seattle involves three zones, with the inner or central zone covering the "waist" of the hourglass, the area to the north designated as the northern zone, and the area to the south identified as the southern zone.

In the case of a truly rectangular shaped community area, the same type of central and "wing" zoning could be adapted. The number of zones on each side of the central zone would simply depend on the size of the community.

There are a few types of zone systems which depart radically from the central zone idea, and there are flat fare systems which incorporate "Zoned Service," such as that found in Cleveland. This type of system is one in which certain routes from the center of the city out into the suburban areas are set up with express, limited and local service, operating different distances for different fares, premium fares being charged for the express and limited service.

The fact still remains, however, that the zone system with a roughly circular central zone probably would

be the solution in the majority of communities. This is the type found in the majority of cities which presently are operating under the zone system.

The central zone of such a system is laid out to cover the greatest density of transit riding. The central zone is surrounded by one or more concentric zone circles, depending on the size of the city and its suburban areas. A minimum rate of fare is charged for rides wholly within the central zone, and rides which extend beyond the central zone are charged for on the basis of an additional fare increment for each zone traversed. In most zone systems, the minimum fare rate, known as the central zone fare, is also charged for a single ride wholly within any one of the outer zones.

The greatest volume of riding is in and out of the central zone, which covers the main business and shopping district. However, the location of a large group of industrial plants on the outside edge of the city area can produce a substantial volume of across-the-city riding.

At the present time, there are no more than about 20 transit companies which operate formal zone systems. A look at some of the basic operating

Here are brief reports on existing zone

GRAEME REID, Transit Consultant of Ford, Bacon & Davis, says . . .

. . . *"The primary objective of a zone fare system is to adjust the riders' cost of service to the quantity or mileage of service they use. No other business, industry or utility attempts to sell its product or service on a one-price basis regardless of quantity. Along with this objective, zone fares, properly designed, are a means of obtaining more revenue by inducing more people to ride shorter distances, and at the same time provide for a more reasonable return from the long-haul passenger. The high flat fare discriminates against the short-haul rider in favor of the long-haul rider. It is too high to encourage short riding and too low to pay the costs of the longer rides. Accordingly, those desiring to go relatively short distances either walk or do not go and thus leave only the comparatively long-distance riders with their inadequate fare.*

"The long rider is for the most part the commuter, which certainly in the larger cities includes a substantial percentage of those traveling between their homes and their places of employment. It is these rides that have increased in length as residential areas have expanded farther out. Those who have moved into these outlaying residential districts have received all the benefits of pleasanter and healthier living, lower rents or property values, and no higher fares than are charged those remaining in the downtown area.

"To continue to accommodate these increasingly long-haul riders at no increase in fare may be good political strategy but it is mighty poor economics. It may well be that the day will come when the short riders, realizing how much they are supporting the relatively low fares for these long riders, will themselves constitute a substantial and opposing political consideration.

"When the point has been reached where the law of diminishing returns takes effect, that is, when further increases in fare cause such a loss in riding that the total revenue is reduced, then there is no recourse but to go to a zone fare or go out of business. It would seem only reasonable to anticipate that time by developing plans for a zone system now and, at least in some sections, starting the installation of certain fare zone areas leading to an ultimate systemwide plan."

Hudson Bus Lines, Nashua, N. H. • The central area zone on this property has a radius of about 1½ miles from a point about midway in the shopping area of the community. A second zone surrounds the first zone.

Fares are seven cents per zone, with no transfers. The Johnson "J" box is used. The driver collects two cents manually for each five cents deposited in the fare box. Fares are collected pay-enter in the first zone and pay-leave in the second zone. The zone fare system in Nashua was inaugurated in 1948.

Springfield Street Railway, Springfield, Mass. • The business center of Springfield is near the western edge of the geographical area of the city. The central zone, covering the business center, extends four miles eastward, about half-way to the city line, where the second zone begins. The second zone ends on the east at the city line.

To the west, the central zone extends a little over three miles into the town of West Springfield.

The basic cash adult fare is 12 cents per zone. Cleveland cabinet and locked cash drawer are used. Pay-enter is the method used on this operation, and passengers paying into outer zones are given identification checks. In outer zones, passengers leave by the front door and must come up with identification checks or else pay a second zone fare. On inbound trips, the driver goes through the bus at the central zone limit to collect checks. In the central zone, passengers may leave by either door.

Milwaukee Electric Railway • The central area zone system is in operation on this property. It consists of a series of concentric circles radiating from the center of the main business district. The radius of the inner circle area is 5½ miles, extending from a point in the downtown area considered to be the center of riding.

Suburban zones encircle the central area, each one mile apart. There are at present 17 routes which operate to some extent within the suburban zone area. Of these, one consists of six zones, one of four zones, four of three

features involved in these zone operations might help throw light on the overall question of zone fares.

Some few months back the American Transit Association began gathering basic data on these zone fare systems, and at the present time the ATA staff is preparing this information for distribution to its membership in the near future. The editors of BUS TRANSPORTATION are deeply indebted to the ATA for making available certain of this data on these systems for purposes of this article.

It is important to note here that transit operations which have zoned areas on routes between two nearby communities were not the primary concern of the editors in preparing material for this series of articles on zone fares. The approach to the zone fare question has been in relation to the probable advantages of zone fares over flat rates in the cities and adjacent suburban areas, with particular emphasis placed on the likelihood of recapturing some of the lost short-haul riding with minimum fares for the central or inner zone.

The following basic data, then, applies mainly to zone systems in city and suburban areas, as operated by the companies indicated.

systems in eight communities

zones, two of two zones, and nine of one zone. There are no intersecting lines within the suburban zoned areas, therefore no opportunity for transferring.

The central zone cash fare is 15 cents, while the suburban zone fare is five cents per zone when it is in connection with a ride to or from the central area. A minimum fare of 10 cents is charged for a ride wholly within the suburban zoned area. The fare structure includes tickets, unlimited ride weekly passes, limited weekly school passes, and free transfers.

Fare collection is normally on a pay-enter inbound and pay-leave outbound. On all but one of the routes, riding is almost entirely from the central zone into the suburban zones. Wholly suburban riders, being small in number, are mentally noted by the operator.

On one route on which riding is particularly heavy, and on which many passengers ride wholly within the suburban zones, a special zone check is issued.

Los Angeles Transit • The central or inner zone on this property has a radius of approximately four miles from the center of the downtown business area. Around the perimeter of this inner zone is a complete circle of eight second zones. These average between two and three miles in length. Five third zones similar in area to the second zones are joined to the outskirts of the second zones. Two suburban areas beyond the third zones on the south are designated fourth zones.

The Los Angeles Transit zone system could be described as a spider-web pattern. About half of the patrons use more than one line and they travel in all directions.

The basic fare for a ride entirely within any one zone is 10 cents, with an additional five cents for each additional zone traversed. Children under five years are carried free, and there are student fare books at reduced rates. Free transfers are provided in all zones. Full transfer privilege on multi-zone rides is assured by payment of the full multi-zone fare at the start of the trip.

There is no necessity for riders to adopt circuitous routes of travel to secure the lowest multi-zone fare. Such riders are not charged more than the minimum

R. GILMAN SMITH, Transit Consultant, of W. C. Gilman & Co., says . . .

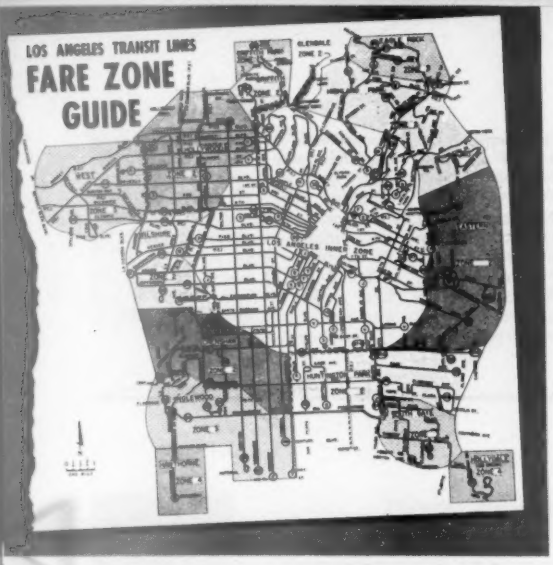
. . . *"Zone or distance fares will not cure all of the problems of urban transit. They are, however, sound from an economic standpoint. In all other forms of passenger transportation the charge per passenger varies with the length of journey taken. It is equally true in all other business that the customer pays in proportion to services or goods received. A zone or distance transit fare structure will certainly be less discriminatory than a system wide flat fare.*

"A zone fare system certainly means the end of the one-city-one-fare idea. It also means, however, that those individuals who from choice or accident live two or three miles or less from their place of employment will pay less for their daily commuting rides than those individuals who live five or seven or more miles from where they work. This situation certainly exists today if other forms of transportation (taxi, private automobile, suburban bus line or commuter service on a railroad) are used.

"Such a system also means that when a fare increase is necessary the short distance rider will probably not receive as large an increase as the long distance rider. In the initial application of a zone system to an existing flat fare area a large proportion of existing riders might well suffer no increase at all, and some might even enjoy a decrease in the cost of their daily transit rides.

"There is no question but what system average speeds will be reduced somewhat. However, fare collection practices can remain as at present on vehicle miles handling 75 per cent or more of total passengers. Passenger identification can similarly be limited to 25 per cent or less of total passengers. Certain urban transit systems today are operating with both fare structures and fare collection procedures more complicated than are necessary for a zone fare system.

"The benefits to be gained warrant serious and unbiased study. The problems can be solved without any material adverse effects on service or operating costs. San Antonio, Los Angeles, Worcester among others are functioning with zone fares and methods for zone or area fares have been worked out for such dissimilar situations as Chicago, Cincinnati and Seattle."



FOUR-ZONE SYSTEM in Los Angeles starts with the inner zone, surrounded by Zone 2 subdivided into regional areas. Zone 3 constitutes five discontinuous areas, with the discontinuous Zone 4 on the south.

through fare from origin to destination merely because they must pass through one extra zone to make a trip by a direct route, provided that no portion of the trip requires a fare higher than that paid for the entire trip.

Johnson D-Q-M fare boxes are used on all lines. Zone checks are issued by the operator for fare identification at zone boundaries. If a passenger takes a transfer upon payment of a fare, no zone check is issued, since a valid multi-zone transfer serves also as identification at zone boundaries.

Fort Worth Transit Company • This company operates a zone system with a central area zone and one outer zone, except on one route which traverses two outer zones.

The central zone cash fare is 12 cents. The additional charge for a ride into the outer zone is five cents.

Regular fare is collected when the passenger boards the bus. The extra zone fare is collected when the passenger leaves the bus.

San Antonio Transit • The average radius of the central zone on this property is three miles, with a maximum radius of four miles. The central zone is surrounded by three more zones in concentric circles radiating from the center of the downtown business section. The second zone circle has a radius of four and a half miles, the third zone six miles and the fourth zone seven and a half miles. In these outer zones the lengths one-way average 1.6 miles.

The basic cash fare is 10 cents for a one-zone ride, plus five cents additional for each additional zone traversed. In other words, the central zone fare of 10 cents applies to a ride wholly within any single zone. A ride through two zones, any two zones, is charged for on the basis of 10 cents for the first zone, and five cents for the second zone. An inbound ride from the second zone through the central zone and on out into the second zone on the other side would be a three-zone ride, and the total fare would be 20 cents.

Cleveland locked fare boxes are used. All fare collections are made at the front door. Central zone exits are made through the center door. Outer zone exits are through the front door, and the proper zone fares are collected as passengers leave the bus.

Charleston Transit Company, Charleston, W. Va. • The average radius of the central zone area in this city is 1.86 miles, with a maximum radius of 2.6 miles. Additional zones cover residential areas adjacent to the city.

The basic cash fare within the central zone is 10 cents, or 3 tickets for 25 cents. The cash fare (no tickets) between the central and suburban zone is 10 cents straight. A single zone ride other than within the central zone is seven cents. Multiple interurban zone rides are five cents per zone.

Fares are deposited in the "Cleveland" type fare box. The driver's function with respect to fare collection is to check the amount of fare deposited, make change, sell tickets and issue zone checks. These zone checks, of various colors and designations, are used to indicate the point beyond which additional fare is required. The checks are generally collected by the driver as the passenger leaves the bus by the front door, but this is varied on certain interurban lines at the beginning of a zone where a large number of short-haul riders get on a bus predominantly loaded with interurban passengers. In this case, the driver stops and goes through the bus picking up each applicable zone check. He can then discharge his mixed load from both doors at a busy stop further on.

Eastern Massachusetts Street Railway • This operation is somewhat different from the usual single city transit company, in that it provides city-suburban services for 74 communities in Eastern Massachusetts, over a total of 707 route miles.

All of the routes of the company are zoned. Zone division points are fixed at the center of the cities, so that a passenger traveling across the center pays two fares. Suburban areas adjacent to the cities and towns are also zoned.

The "traffic center" in most of the communities serviced is established so that riders may travel into these fare extension limits without having to pay an additional fare, providing that the extended ride can be made without changing buses. The traffic centers are established in relation to shopping areas, theaters, churches and other public buildings, so that riders can reach these centers without paying an additional fare for a short ride.

The principal cash fare is 10 cents. The next increment of fare above 10 cents is five cents, or a total of 15 cents. The rates increase by five cents for each zone of approximately two miles.

No transfers are used except in one division to take care of a situation where a passenger riding on two buses is entitled to a lower fare than the regular fare on each bus for the ride taken. On inbound trips to the center, fares are collected pay-leave. On outbound trips from the center, fares are collected pay-leave. Zone checks are used to identify passengers. Stationary Johnson Type J Electric fare boxes are used.

How Interstate Commerce Laws Affect Bus Companies

By Leo T. Parker • *Attorney at Law*

● DURING THE PAST few months several new interstate commerce higher court decisions became effective, and very importantly affect all bus corporations. We shall briefly review the outstanding decisions. Readers who desire to read the complete decisions may do so by conveniently obtaining the required citations in any good library.

Baggage Liability

First, we shall consider the legal differences and advantages that interstate bus companies have over intrastate bus companies, with respect to lost baggage. According to a late higher court decision a bus corporation which "checks" a passenger's baggage on an intrastate journey acts as a warehouseman. Hence the bus company is not liable unless the loss results from negligence of its employes. Also, a passenger is not bound by a limitation clause printed on the check, or on a large sign, unless his attention is directed to the limitation clause and he is given an opportunity to pay an additional fee and have full protection against loss.

For illustration, in Allen v. Southern, 213 Pac. (2d) 667, the testimony showed: One Allen while enroute intrastate checked a traveling bag and contents which were worth $2,190. At the time this bag and contents were deposited in the station's check-room, Allen was given a parcel check on which was printed the following:

"Notice—Liability for loss of, damage or delay to any parcel limited to not exceed $25.00 unless at time of deposit a greater sum is declared and paid for at rate of 10 cents for each $25.00 or fraction thereof for 30 days or less. No parcel valued in excess of $250.00 will be accepted. Parcels remaining on hand 30 days may be sold for charges."

There was also posted a sign at this parcel room to the same effect as the printing on the check, which sign was visible to Allen when he checked his bag but which he claimed he did not see or read nor did he read the printing on the check.

When Allen presented the parcel check a few days later, it was found that the traveling bag and contents had been stolen from the check-room. Allen sued the carrier to recover the full value, $2,190.00. The court believed Allen's testimony that he did not see or read the notice posted at the parcel room, nor did he read the check, that he had no actual knowledge of the limitation contained therein, nor were such limitations or conditions called to his attention.

In holding Allen entitled to recover the full value of $2,190.00, the higher court said:

"A check-room business is no part of the business of a common carrier and when it acts in that capacity it is acting as a warehouseman. The trend of the more recent authorities is to view the receipt from the bailee (carrier) a token for later identification of the property and does not bind the bailor (Allen) to the provisions, limiting the bailee's liability, which are printed thereon, where his attention is not called to them. The mere retention of such a check without such knowledge does not bind him to the limitation."

With respect to the large sign having printed thereon a notification that the carrier is not liable for more than $25.00 for each checked parcel, the higher court said:

"We say that even though a notice of limitation is posted where the bailor (Allen) can easily see it—he may even have pushed it aside to put his suitcase down —unless his attention is called to the notice or sign, he is not bound by it."

For comparison, see Jones v. Great Norther, 217 P. 673, 37 A. L.R. 754. Here a passenger deposited traveling bags in a parcel room, and they were negligently lost. He paid ten cents per parcel. The check provided that liability in case of loss is not to exceed $10. The passenger testified that he had seen the printed matter on the checks but did not read it. Therefore the court held that he could recover the full value of the bag.

It is important to know that the above explained law is effective exclusively to intrastate travel and commerce. On the other hand, all higher courts hold that if a business corporation operates interstate and has filed with the Interstate Commerce Commission a schedule in which the carrier's liability for lost baggage is limited, the passenger cannot recover more than the limitation although he had no knowledge of the limitation. See Boston v. Hooker, 233 U. S. 97.

The court held that baggage in interstate commerce is subject to published rates, even though the passenger

The Public Service Commission and the City function at

was not aware of the fact that there were different rates for different valuations of the property, and the court explained that the common carrier's liability was limited to the amount actually provided by the different scheduled rates.

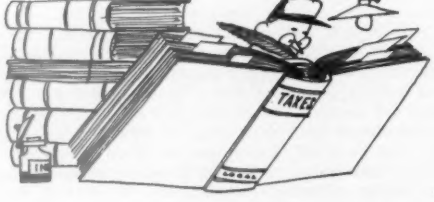
And again see Healy, 138, N.Y.S. 287. This court held that ordinarily a bus corporation is responsible for the value of the goods or baggage lost or destroyed through its negligence. The great weight of authority is that a bus company cannot entirely exempt itself by contract from liability due to its negligence, and contracts limiting its liability for negligence are against public policy and therefore void.

Hence, it seems that with respect to baggage and other merchandise lost, destroyed, stolen or damaged through negligence of the bus company's employes, the bus company cannot avoid paying full value to the passenger although a limitation clause is valid and effective under ordinary circumstances. In order that the passenger may benefit by this latter law, the duty falls on the passenger to prove that the loss resulted from negligence of the carrier's employes.

Validity of Taxation

Recently a reader asked this question: "What state taxation laws are valid which tax bus corporations that transact interstate commerce business?"

First, it is important to know that a state may tax a bus company's real and personal property used in interstate business if the taxation is not discriminatory and does not favor intrastate business. Nevertheless when not encroaching upon the prerogatives of the national government or violating the guarantees of the Federal Constitution, the States have the attribute of sovereign powers in devising their fiscal systems to insure revenue and foster their local interests. The States in the exercise of their taxing power are, of course, subject to the requirements of the due process and the equal protection clauses of the Fourteenth Amendment, but this constitution and amendment imposes no iron rule of equality nor prohibits the flexibility and variety that are appropriate to modern schemes of taxation.



Hence, the state may tax real and personal property in a different manner, and it may grant certain well founded exemptions. Moreover, a State is not limited to ad valorem taxation. It may impose different specific taxes upon different trades and professions and may vary the rates of taxation upon various products and the same general classifications of businesses. In levying such taxes, the State is not required to resort to close distinctions or to maintain a precise, scientific uniformity with reference to composition, use, or value.

Notwithstanding these rules of law a state taxation law generally is invalid which unduly interferes with interstate commerce. However, this latter rule of law is not applicable with respect to taxation of interstate buses where the state tax is intended to use to construct and maintain the state's highways.

For illustration, in Capitol Greyhound Lines, 70 S. Ct. 806, the Supreme Court of the United States upheld the validity of a state law which taxes bus corporations 2% of the value of buses used on the highways and for which the state had granted permits or title certificates.

This court also explained that a state tax on bus companies is void if the testimony shows any of these facts: The privilege of using the highways is not considered in the tax law; the tax favors intrastate commerce and discriminates against interstate commerce; or the tax law specifies that the tax is for the privilege of doing interstate business instead of paying part expense of constructing and maintaining the state's highways.

Real Vs. Personal Tax

Modern higher courts consistently hold that neither a state, county or municipality may tax as personal property anything permanently attached to real property.

For illustration, in Taylor v. Willibey, 212 Pac. (2d) 453, it was shown that county officials assessed real property taxes aganist a terminal, and also assessed personal property taxes on the seats and other fixtures. The evidence established that the seats and fixtures were permanently attached to the floor of the building with bolts.

In view of this testimony the higher court held that the county authorities could not collect personal taxes on the seats and other equipment personally attached to the building.

Law of Insurance

Considerable discussion has arisen from time to time over the legal question:

What state laws effectively control insurance companies located in other states?

Recently a higher court held that if an insurance company issued a liability insurance policy to a bus company, and the insurance company whose principal office is in another state goes out of business or becomes liquidated, the insurance company's assets are usable for

different levels, with PSC at higher level

benefit of the bus company, and a state law to this effect is valid.

For example, in Misner v. Hawthorne, 212, Pac. (2d) 336, the testimony showed facts as follows: The Southern Kansas Lines was operating a commercial bus line in Kansas, intrastate, under a certificate of convenience and necessity issued to it by the state of Kansas. As a condition precedent to its right to engage in the business of transporting passengers for hire, and as a common carrier of passengers within the state, there was issued to the company by the Keystone Mutual Casualty Company in Maryland a liability insurance policy.

One day one Misner purchased from the bus company a ticket and boarded one of the bus company's buses, which later crashed into the side of a bridge with such force that the right side of the bus was ripped and torn open and she was seriously injured. Misner sued both the bus company and the insurance company for damages. The higher court awarded $4,750 damages to Misner.

Although the insurance company whose principal office was in the state of Maryland, was liquidated the higher court held that the damage verdict must be paid out of the company's assets. The court said:

"There is no suggestion in the record, nor contention on the part of the bus company that the verdict of $4,750 in favor of the plaintiff (Misner) was excessive or should not stand. When the insurance company was authorized to do business in Kansas it came into the state under the provisions of our statute relating to foreign corporations."

Right to Designate Routes

Another important point of interstate commerce law involves the legal right of a state, county or municipality to designate routes to be followed by buses. Generally speaking, such laws and regulations are void which interfere with interstate commerces.

For illustration, in Transport Company v. Syracuse, 93 N. Y. S. (2d) 423, it was shown a city passed an ordinance which excluded traffic by common carrier over all public streets except those on a designated route to the boundary of an adjoining municipality which had previously passed an ordinance prohibiting traffic over continuation of this same street.

The higher court held the last enacted ordinance void as being a burden on interstate commerce, because if both ordinances were held valid interstate vehicles would be prohibited from passing through both the municipalities.

Therefore, although interstate commerce was not directly involved in this legal controversy, the court held any city ordinance void which directly or unreasonably interferes with interstate travel by common carriers.

State Law Vs. City Route Ordinance

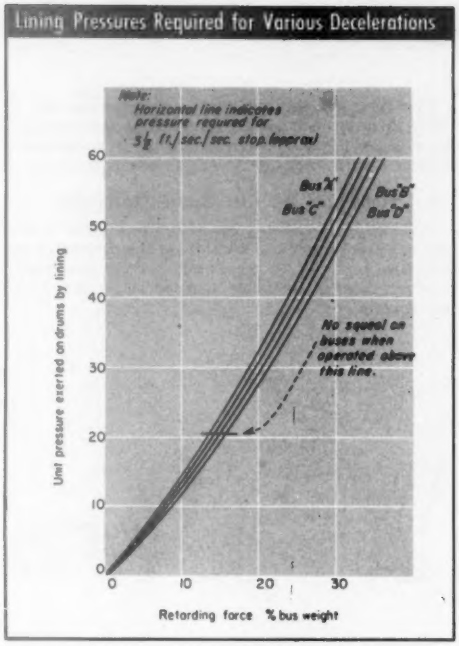
Considerable discussion has arisen from time to time over the legal question: Which law has priority, a city ordinance or order of the Public Service Commission which designates interstate and intrastate bus routes through the city?

According to a late higher court decision the answer is: Since the Public Service Commission acquires its authority directly from the state, its regulations take precedence over city ordinances. This is so because primarily the power of regulation of motor carriers is in the state. The Public Service Commission is an arm of the legislature and is authorized to exercise the power of the legislature as the legislature itself might do within the field of its limitations. A city, however, does not act throughout the state. Its jurisdiction and authority is limited to the territory within its boundaries. Within that territory it may exercise such powers as the legislature has conferred upon it. In other words while the city and the Public Service Commission are both agencies of the state they function at different levels, the commission being at the higher level.

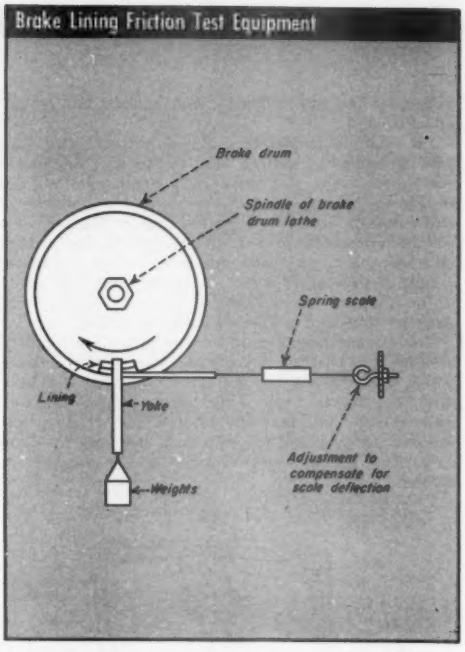
For example, in Safe Way Motor Coach Co. v. City of Two Rivers, 39 N. W. (2d) 847, it was shown the Public Service Commission of Wisconsin issued an order authorizing Wisconsin Public Service Corporation to abandon the bus transportation system it had operated in the cities of Manitowoc and Two Rivers and intermediate points, and by the same order authorized Safe Way Motor Coach Company to operate bus transportation system in the cities of Manitowoc and Two Rivers and intermediate points. The Public Service Commission also issued an order prescribing the route which the bus company must use through these municipalities.

Soon afterward the city of Two Rivers passed an ordinance which specified that the Safe Way Motor Coach Co., shall be permitted to operate buses only upon certain streets in the city of Two Rivers. The named streets were different from those specified by the Public Service Commission.

In subsequent litigation the higher court held that the bus company must operate exclusively over the route specified by the Public Service Commission.



1 Relation of retarding effort to total bus weight produced per unit pressure of lining on the drum.



2 Relative co-efficient of friction measurement for various linings was gained by using ordinary brake drum lathe.

Brake Squeal . . . Can It Be Silenced

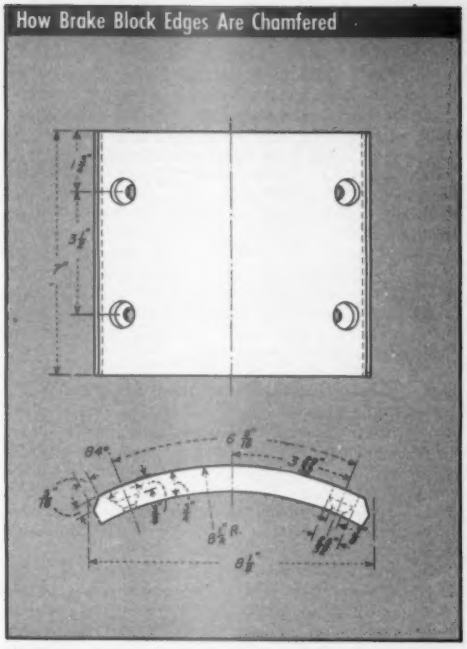
Niagara Frontier Transit tests provide interesting evidence that it can be, if maintenance men take the right approach to the problem—by treating the trouble as something which definitely can be eliminated altogether, and not just temporarily controlled.

By William W. Kunz
Supt. Equipment • Niagara Frontier Transit System, Buffalo, N. Y.

● MUCH THOUGHT and research has been devoted to the problem of brake squeal. However, the chief concern seems to have been to alleviate the squeal rather than to eliminate the condition that causes it. Most suggestions offered have been either to install sound deadening and vibration dampening devices or to make changes in maintenance procedures. I refer to such items as keeping brake linings tight, paying attention to the surface condition of linings and drums, removing cracked and broken linings, correcting operation of foundation brake rigging, and all the other items of brake maintenance which any good maintenance man normally would do, even though his buses were not troubled by squeal.

On the assumption that the maintenance man is doing a good job and, despite everything, is experiencing an epidemic of brake squeal then he may find help from the following procedure. This not only practically eliminated brake squeal on the Niagara Frontier Transit System but also is helping to prevent a recurrence on equipment presently operated or on any other equipment purchased in the future.

In 1947 and 1948, this Company received 221 new buses. After the buses had accumulated approximately



3 Chamfering the edges of the brake blocks combats squeal by reducing the area in contact with the drums.

Permanently?

15,000 miles an epidemic of squealing developed. At first we thought the squealing was confined entirely to the new buses, but after a careful check we realized that we were getting a disproportionate amount of squeals out of buses bought in 1940 and 1941. In the case of these older buses the squealing, however, was not so widespread. Furthermore, it did not appear until brake lining mileage reached 25,000 to 30,000 miles.

Since the brake lining used on more than one-half of these new buses was exactly the same as the brake lining used on all of the older buses, and since we were not experiencing any noticeable squealing on these older buses until forced to make a study of squealing on the new buses, it was quite obvious that the noise was not being caused by a change in the ingredients of the brake lining material.

Tests and More Tests

We checked this further by taking drillings from the brake linings on both new and old buses and found the material to be basically the same. We also ran co-efficient-of-friction tests on linings of the same make from old and new buses and found little difference in the co-efficient of friction. Thus, we were convinced that brake squeal was not due to change in the ingredients of brake lining which we had been using on the property for many years previously without encountering a noise problem. This seemed to indicate possibility of a change of braking conditions for which that particular lining was no longer suited.

On that premise, we ran extensive tests with some 17 different types and mixes of brake linings. We likewise ran special tests recommended by both the lining and bus manufacturers in an endeavor to reduce squeal. The usual tests for brake lining and brake drum surface condition, reinforced drums, various standards of maintenance, various types of drum attachments, as well as reduced lining area also were tried.

Study of Brake Rigging Designs

With one exception—reducing the lining area—none of these special tests produced any lasting relief. This recalled to mind that the older buses had developed an objectionable squeal shortly after they were put into service back in 1940 and 1941. The trouble was corrected by chamfering the edges of the brake blocks, thus reducing the area in contact with the drums. Objectionable noise again developed with these vehicles after 25,000-30,000 miles of service and, on inspection, it was found that the lining was worn to an extent which permitted full contact with the drum. In other words, squeal developed after good contact was achieved between lining and drums.

At the same time it was found that certain of the 17 lining combinations being tested showed some improvement over our standard lining. With these results in mind, we once more observed our operation in detail, checking brake squeal as related to temperature, humidity, speed, mechanical condition, and operation of the brakes. This re-check revealed that the greatest squealing occurred at the point just before the bus was brought to a complete stop and just as the bus operator was releasing his brakes.

Starting from this point, we made a study of the brake rigging designs of our various types of buses. This study revealed that the unit brake lining pressure, against the drum per foot pound of retarding force created related to total bus weight, was considerably higher on the older buses. Figure 1 shows the relation of the retarding effort to total bus weight produced per unit pressure of lining on the drum for our various types of buses. It will be noted that this graph has a horizontal line drawn through it at approximately the 20 pounds per square inch of brake lining pressure. Lest there be any misinterpretation of the information on this graph, the results shown are not actual but relative.

Light, Mild and Loud Squeal

We did not attempt to figure the exact relation between unit lining pressure and foot pounds of torque retardation throughout the braking range because of the difficulty experienced in allowing for various wear factors. However, the information shown is fairly accurate and comparable for types of buses operated.

An analysis of our brake squeal reports indicated that, whenever bus brakes were applied with a pressure below the 20 lb. point, squeal resulted on slow stops. As soon as we used a lining with a co-efficient of friction that required the brakes to operate constantly above that line, no brake squeal resulted.

This led us to the conclusion that possibly we needed

a brake lining of a lower co-efficient of friction on the newer buses in order to require a higher unit lining pressure against the drums for any given stop.

With this in mind, we went back to our original tests on the 17 different types of brake linings, selected those which gave us some improvement in performance, and ran co-efficient of friction tests on those linings. We then selected four linings having approximately the same friction co-efficient and applied those linings to 36 different buses. Each lining was installed on a bus of a specific type under four conditions:

1. Lining and drums ground.
2. Linings ground, drums left in the same condition as they were when the old linings were removed providing they were within our normal maintenance standards.
3. Linings not ground, drums ground.
4. Linings and drums not ground.

In some cases, where there was a question as to the advisability of permitting a drum scored fairly close to our condemning limit to go out into service again, we took plaster casts of the drum surface.

We then set up a regular bi-weekly inspection of the performance of these buses in which we specified:

1. The number of stops to be noted each day by an observer.
2. The same observer was to check all buses.
3. There were to be three graduations of squeal:
   (a) Light—Not noticeable unless being specially observed.
   (b) Mild—Not objectionable, but noticeable.
   (c) Loud—Definitely objectionable.
4. The results were to be tabulated weekly and accumulated and the percentage of light, mild, and loud squeal stops were to be totaled and recorded.

As a result of this final detailed check, we selected two linings which are at present giving us almost perfect brake performance without squeal.

In addition, this final test also demonstrated that (in our type of operation at least) so long as brake drums were held within reasonable surface condition squealing was not caused by slight drum scoring. Nor did normal changes in atmospheric conditions contribute in any material way to the creation of squeal.

Guarding Against Repetition

So much for the method by which the cause of squealing was determined. Our next problem was how to guard against a repetition of a condition which involved spending a considerable amount of money to eliminate brake squealing. And which perhaps might have been avoided in the first place by the bus and brake lining manufacturers.

What's Your Association Doing? Keep the industry posted on the important developments in your area through the Association News section of BUS TRANSPORTATION.

Send us your convention programs, copies of speeches and technical papers—and good convention photographs. To insure up-to-the-minute coverage, please get all copy and photos to Association News, BUS TRANSPORTATION, 330 W. 42nd Street, New York 18, N. Y., by the fifth of the month . . . earlier if possible!

I say the bus manufacturers because the fundamental change was made by them in a commendable effort to give us better brake lining and drum life. But in so doing, they created different unit lining pressures per foot pound of retardation related to total bus weight, using the same lining as before. This was done apparently without informing lining manufacturers so that they could change their lining characteristics.

I say the brake lining manufacturers, because after the squealing condition was called to their attention, they failed to take into account the change in braking condition brought about by the fundamental change in brake design. Furthermore, when we attempted to get friction co-efficient data from various lining manufacturers there was disagreement on a definition of friction co-efficient. Also lining manufacturers in certain instances could not give specific data on the co-efficient of friction of their various linings.

Selecting the Non-Squeal Lining

Faced with that condition, we had to devise means to obtain a relative co-efficient of friction measurement for the various linings. We did this by using an ordinary brake drum lathe and hanging a 3 x 7 in. block of the lining to be tested on a drum mounted in the lathe, with a means of applying various weights to the hanger. This changed the unit pressures exerted by the lining on the drum. This setup is shown in Figure 2.

When the brake drum was permitted to revolve, the tangential force created as a result of the load on the lining served as an indication of the relative friction co-efficient for the various linings. By the use of this simple device we can select a lining which we know will not produce squeal. However, we must still make a brake test to determine its ability to make uniform stops under varying load conditions and to make a sufficiently good stop to meet Public Service Commission requirements.

In conclusion, I would make certain suggestions to the bus and brake lining manufacturers on how they can be of assistance to the operator.

First, the bus manufacturers should work closely with the brake lining manufacturers when any changes in brake design are planned. Attention also should be directed to any contemplated change in the relation between foot pounds of retardation related to total bus weight per pound of unit lining pressure.

Brake lining manufacturers are in the picture continuously not only when the bus is in the design stage but also after it goes in service. They should agree on a uniform method of measuring co-efficient of friction, or else provide the operator with some easy method of converting their friction co-efficient grading to a standard. This would enable the operator to use one make of lining interchangeably with another make of the same specifications insofar as friction co-efficient is concerned.

I realize that this may raise protest from some. But the fact remains that experiments have proven that various makes of brake linings can be operated satisfactorily on the same bus providing proper attention is paid to the friction co-efficient characteristics of the various makes.

Some of the statements made here may be considered critical of the manufacturer. Similar criticisms also can be made of the maintenance methods of bus operators, including our own operation. However, I sincerely feel that the way to bring about an improvement is to call definite attention to what is believed to be wrong.

THIS OPENED THE BUS SHOW SECTION OF OUR SEPT., 1934 ISSUE. HAD ALL THE "LATEST MODELS." IT SHOWS . . .

What Changes Time Hath Wrought

● WHAT WAS the last word in bus design and the newest thing in body styling back in 1934 is shown in the photo montage on this page. This illustration served to introduce a pictorial exhibit of modern motor coaches—the Bus-Show-In-Print—in the 1934 Convention Issue of BUS TRANSPORTATION.

Since 1934, styles in vehicles have changed almost as much as the conditions under which they operate. Some of the vehicles pictured here, and particularly those designed for transit service, bear a slight resemblance to their modern successors. The lines of the intercity coach, however, have been completely transformed with the disappearance of the once-familiar engine hood. Even more spectacular than the changes which are apparent to the eye are internal changes in design and construction.

In the 17 years since the vehicles pictured here rolled off the production lines in all their pristine freshness we've come through a depression and a world war, witnessed a postwar reconstruction period and are now in the throes of combating inflation while rearming for national defense. And while most industries currently are enjoying prosperity the bus industry has had to combat higher costs with lowering revenues. But the industry has come through other crises successfully and there is little doubt that an answer for the current one will be found just as in 1934 when the industry started on the upgrade after several lean depression years.

Next month these pages will feature the current offerings of the vehicle manufacturer for transit service and intercity operation. These vehicles represent the finest line of public transportation equipment ever produced—the 1951 models of motor buses and trolley buses.

Be sure not to miss the 1951 Bus-Show-In-Print.

The company made sure riders were primed and ready for its improved service...

PACED BY THIS ALL-AROUND PUBLICITY PUSH, THE TEST WAS GIVEN EVERY CHANCE TO PROVE A SUCCESS . . .

St. Louis PS Test Indicates That Padding

● "THE TROUBLE IS that you cut your service too thin. Put on more vehicles, step up your service, and you'll get more riders and make more money."

This pat nostrum for transit ills has become familiar to many transit executives. But no major transit property had tested the remedy until recently when, at the suggestion of the Mayor's Mass Transportation Committee, St. Louis Public Service Company decided to give it an all-out trial on four lines.

Once and for all, Public Service officials figured, they would get the real answers on what happens—in terms of increased ridership versus increased costs—when service is padded during off-peak riding hours. And having made the decision, the company spared no effort or expense to make the test a fair and searching one. Planned and executed under the direction of John C. Baine, PS's executive vice president and chief operating officer, the experiment ran for 90 days, doubled service on four routes, and was promoted in every way possible.

First off, the company made a big publicity splash, which started before the test and carried on throughout its run. Eye-catching posters, placed at each stop on all four routes, announced the new improved service. Window-display placards spread the news in stores along the way. Timetables were distributed house-to-house in the affected areas, and also were passed out in vehicles. Complete schedules were posted at all stops on the routes, news releases kept the press and radio aware of the service changes, and newspaper and radio advertising bolstered the overall drive.

In setting the experiment in motion, the lines to be tested were selected on the basis of reaching sections of the community which had high riding potentials. Two of them, the Bates and Loughborough bus routes, were both "feeder" or connecting lines and served similar areas, largely residential, in South St. Louis. The other lines, Wellston and Jefferson, were two of the heaviest streetcar routes, serving densely populated city areas over their entire runs. These two operate over 2,000 miles daily with a per-mile revenue of nearly $1.

Here, in a nutshell, is what happened...

Summary of Results for Base Period 9AM-4PM*

	Base Revenue		Increase		Base Miles		Increase		Revenue per Mile on Increased Miles
	Before	After	Amount	%	Before	After	Amount	%	
Wellston	$834.02	$850.76	$16.74	2.01%	884	1,206	322	36.43%	5.20¢
Jefferson	$625.41	$648.08	$22.67	3.62%	643	1,037	394	61.28%	5.75¢
Loughborough	$ 72.05	$ 79.35	$ 7.30	10.13%	191	349	158	82.72%	4.62¢
Bates	$ 55.92	$61.76	$ 5.84	10.44%	136	224	88	64.71%	6.64¢

*BASED ON ACTUAL FIGURES

Summary of Results for an Entire Day*

	Daily Revenue		Daily Miles		Revenue per Mile		% Decrease in Revenue per Mile
	Before	After	Before	After	Before	After	
Wellston	$2,523.63	$2,534.28	2,626	2,881	96.10¢	87.97¢	8.46%
Jefferson	$2,079.60	$2,111.40	2,075	2,526	100.22¢	83.59¢	16.59%
Loughborough	$ 209.16	$ 218.79	498	705	42.00¢	31.03¢	26.12%
Bates	$ 166.03	$ 170.84	384	496	43.24¢	34.44¢	20.35%

*BASED ON ACTUAL FIGURES

. . . REVENUE INCREASED, BUT NOT NEARLY ENOUGH TO COVER HIGHER COSTS

Service Won't Pad Revenues

Following through all the way, PS practically doubled the service on each of these four lines. The Wellston and Jefferson routes, running at nine and 10 minute intervals respectively, each went to a five-minute headway; Loughborough upped it service from 20 minutes to every 10 minutes; and Bates from every 30 to every 15 minutes.

The test on the bus lines began on March 26. Increased service on the streetcar lines started April 2. Prior to these dates, and during the experiment, both the company and the city, independently, conducted surveys on the test lines. These checks, of course, were used to determine if this stepped up service, given proper publicity, would gain enough additional riders to justify the increase in operating cost.

Quickly, the test stacked up as follows:

	Mid-day Service Intervals		*% Increase In Mid-day Revenue*
	Before Test	*During Test*	
Wellston	9 min.	5 min.	2.01%
Jefferson	10 min.	5 min.	3.62%
Loughborough	20 min.	10 min.	10.13%
Bates	30 min.	15 min.	10.44%

These figures, of course, only give immediate results, without interpretation. Actually (and this is the crux of the matter) the revenue produced by the additional miles was found to be but a drop in the farebox compared to the out-of-pocket expense involved. (Any transit company executives who would find it interesting to examine the exact figures on the operating costs, in connection with this test, may obtain them by a request in writing forwarded to the St. Louis Public Service Company.)

Moreover, in order to present the results as favorably as possible, these revenue-per-mile figures were adjusted to reflect a system decline in riding which occurred during the test period. The adjusted figures show revenue for the increased miles to be seven to 10 cents on the bus lines and eight to nine cents on the streetcar lines.

Two summaries of results, one based on the base period of nine a.m. to four p.m. and the other based on the entire day's operation of the four lines, are shown elsewhere in this article. The figures in these tabulations point up the shortcomings of the padded service sharply. Particularly noteworthy are the percentage decreases in revenue per mile for the four runs, ranging from a decrease of 8.46 per cent to 26.12 per cent per mile.

Report on Findings

Confronted with these results, it is not surprising that the report, issued jointly by the company and the Mayor's Committee, read in part as follows: "Despite all the favorable conditions of this test, the obvious conclusion is that additional transit riding cannot be stimulated, except to a very limited degree, by an increase in the amount of service provided. In any event, the resulting increase in riding falls far short of covering the additional operating costs."

Despite the findings of the test, the aftermath brought only guarded comments from city officials, who seemed reluctant to admit it was a failure. Without mentioning the test, Mayor Joseph M. Darst said: "I believe firmly that the public is entitled to improved transportation service."

Various other city officials, also waiving mention of the test, went on record as requesting better transit service. Public Utilities Director Conway B. Briscoe flatly disagreed with the report, and said it was significant that the company had decided to leave service on the two streetcar lines expanded by about 20 per cent. This development, he insisted, showed the experiment was by no means a complete failure.

With so much official scrutiny of St. Louis Public Service, it may be that other experiments on increased service are in the offing. However, on the basis of the recent test, "it is evident," as the report states, "that the amount of service provided must be determined by the existing riding pattern."

All Aboard For The . . .

Alumni Football Special

By Frank Kane
Managing Editor

● THE MIDDLE OF August, and a sweltering one at that—in most parts of the country—might seem a strange time to bring up the subject of football.

But to intercity bus carriers who hope to wring a few extra revenue dollars out of the mad, national hysteria known as the "football season," August is none too soon to begin laying plans for the promotion of special football charters. As a matter of fact, May and June is the ideal time to begin the real spade work in developing and selling charters to college alumni groups in the areas adjacent to university centers throughout the country.

This particular charter market is potentially a rich source of additional off-line revenues for intercity carriers. To a great extent, it remains untapped. During the past several years, transit carriers have developed considerable special football charter service of a short-haul nature, such as hauling alumni groups and fans from the center of a city out to the adjacent stadium, or short hops from one city to a nearby city.

Lack of Promotion

But, essentially, the longer haul type of football charter servicing alumni groups in areas up to 200 miles from a university center has never been developed fully by intercity carriers. In many instances, no more than casual attention is devoted to this extra revenue source. In most cases, no department or individual is specifically charged with the responsibility of developing and selling this type of charter. If an inquiry comes in, a charter price is quoted, and that's about the extent of the promotion of this kind of business.

Even when a football charter of this kind is dumped right in the lap of an intercity carrier, it frequently happens that there is no one in the traffic department who has built up a backlog of experience in handling all the numerous details which are, or should be, a part of such a charter job.

An instance of this kind occurred last Fall in New York City. A prominent Yale alumnus approached a large intercity carrier in New York and explained that he, and a group of his fellow Yalemen and their wives, wanted to charter a bus to go to the Yale-Dartmouth football game in New Haven. The deal was consummated, but when the Yale alumnus raised questions regarding how near to the stadium they could park, whether parking permission was required, the route or routes to the stadium, and numerous other questions, no one in the carrier's traffic department had the answers. Worse, no one even seemed inclined to ferret out the answers. The upshot of this magnificent example of "merchandising" was that the Yaleman got in touch with the Yale athletic authorities, obtained the answers to his questions, and arranged travel and parking details.

Whether this particular case could be proved an exceptional one or not, is beside the point. The point is that this was a large intercity carrier, ostensibly in business to develop business and make a profit. On that day it had idle equipment of its own available in New York, and plenty of equipment which it could obtain on lease terms. There were five large college football games scheduled that day, all within a radius of 150 miles of New York. Yet, the Yale-Dartmouth charter job was the only one this carrier handled that day, and even this one came in unsolicited. A further significant fact is that this charter proved to be the most profitable piece of business handled that day.

Still more significant is the fact that no other intercity carrier in the immediate New York area went after any of this potential charter business on that day. Five games were involved, with ten college teams participating. Several thousand graduates of these ten colleges are located right in the New York city area. Yet, as far as could be found out, no attempt was made to develop any of this potential business into profitable football charters designed for the pleasure and convenience of college alumni groups.

"The Best Possible Way"

That's generally the situation in the New York city area. A quick, spot check around the country indicates that intercity carriers elsewhere have done little or nothing about developing this type of extra revenue business, except in a few cases.

Following the successful completion of the Yale-Dartmouth charter trip mentioned above, the members of that Yale alumni group were unanimous in their opinion that this was "the best possible way" to go to a football game. As one of them said: "We had a whale of a lot of fun. With a modern type of intercity coach, it's a comfortable and enjoyable ride, and it's cheap. You have the company of your own congenial friends and their wives. You can take picnic lunch baskets, go when you please and come back when you please. But I don't understand why the bus company can't be a little more businesslike on these things. We practically had to sell them on the idea of taking us to the game."

How to plan and sell alumni football charters

To develop and sell the particular type of business referred to above as alumni group football charters, careful planning and modern sales techniques are needed. An intercity bus company traffic manager can quickly determine the potential alumni business in his operating territory, and once having determined that this is a business worth going after, half his battle is won.

▶ In the first place, he will find that he has the complete cooperation of university officials, since they are eager to promote increased game attendance, by whatever the means of transportation.

▶ In the second place, he will find his

football charters "easy sellers" once the word gets around among the alumni that they can have "a whale of a lot of fun" by going to their college games that way.

The first thing needed is the specific assignment of one or more traffic men to handle this business, followed by establishment of close relations with athletic association officials of every college within, say, a radius of 200 miles. As football schedules are announced, generally in May and June, covering games the following Fall, determination should be made as to which games the carrier will cover. An important consideration here is the location of nearby equipment points, so that excessive deadhead miles will not be involved in any particular charter job.

Alumni Address Lists

Next, an address list of every alumnus of every college in the 200-mile radius area can be obtained, together with the addresses of each of the alumni clubs or associations in each of the cities. If a reasonably large university is located in City A, every other city within a radius of 200 miles is bound to have its quota of alumni of that university. Every one of these graduates is a potential charter customer for "home" games of his university played in City A. Conversely, if this university in City A is playing an "away" game in any of the surrounding cities, every local alumnus in City A is a potential charter customer for a trip to the game.

Well before each particular game, a list of alumni concerned with that game could be solicited. Probably the most effective means of doing this would be the penny postcard. A few well-chosen words could outline the advantages of traveling to the game in a congenial and friendly group of fellow alumni, with emphasis on the "whale of a lot of fun" point of view. The objective here is simply to "plant the idea" firmly in one man's mind. No further direct selling is needed. If one man gets enthusiastic, the likelihood is that he can sell a group of his friends on the idea. It only takes about 17 or 18 alumni members, together with their wives and sweethearts, to make up a profitable football charter load.

At the same time, posters can be sent to alumni secretaries in each city, with the request that they be hung on bulletin boards in alumni clubs, and the further request that announcement of the available charter service be made during the course of any alumni meetings. In addition to this form of solicitation, it might be worthwhile to set up a newspaper advertising campaign, the first insertion to appear just before the start of the football season, other insertions to appear on the basis of once a week throughout the season.

As each group charter arrangement is completed, the carrier should work closely with the athletic officials of the college involved. At least two weeks before each game for which an alumni charter has been arranged, the carrier should notify the college athletic officials of the number of total buses involved, together with the number of total passengers. In this communication the carrier should request information on traffic regulations in the stadium area, together with specific permission to park in the nearest authorized parking area adjacent to the stadium. The college authorities will be glad to furnish this permission in writing so that its visiting alumni groups will not be inconvenienced by any officious parking attendants or traffic officials who might take a notion to route the bus to some distant point from the stadium.

One More Sales Tool

Under normal circumstances, each university has its own system of assigning reserved seats to the members of the alumni body. Under any such system the members of a football charter group might very well be completely separated once they enter the stadium to go to their seats. On the basis that a majority of alumni charter groups might prefer to sit together as a group in the stadium, this subject could be brought up for discussion with the college athletic officials. In the event that such an arrangement were satisfactory to the athletic officials, an entire block of so many reserved seats could be assigned to the carrier for distribution to the members of its charter party.

Such an arrangement would serve as one more sales tool for the carrier in promoting its football charter service. This plan has two important advantages: it relieves the individual alumni members of the charter party of the necessity of mailing in applications for reserved seats; and it relieves the athletic association officials of a portion of their complex problem of handling mail applications and assigning reserved seats on an individual basis.

This plan also has its drawbacks, however. If plans for an alumni charter group have been completed several weeks in advance of a particular game, there would not likely be any problem involved in obtaining a block of choice seats. But if a last minute charter party is arranged, particularly for an end-of-the-season "big game," the carrier might not be able to guarantee that it could obtain a block of choice seats.

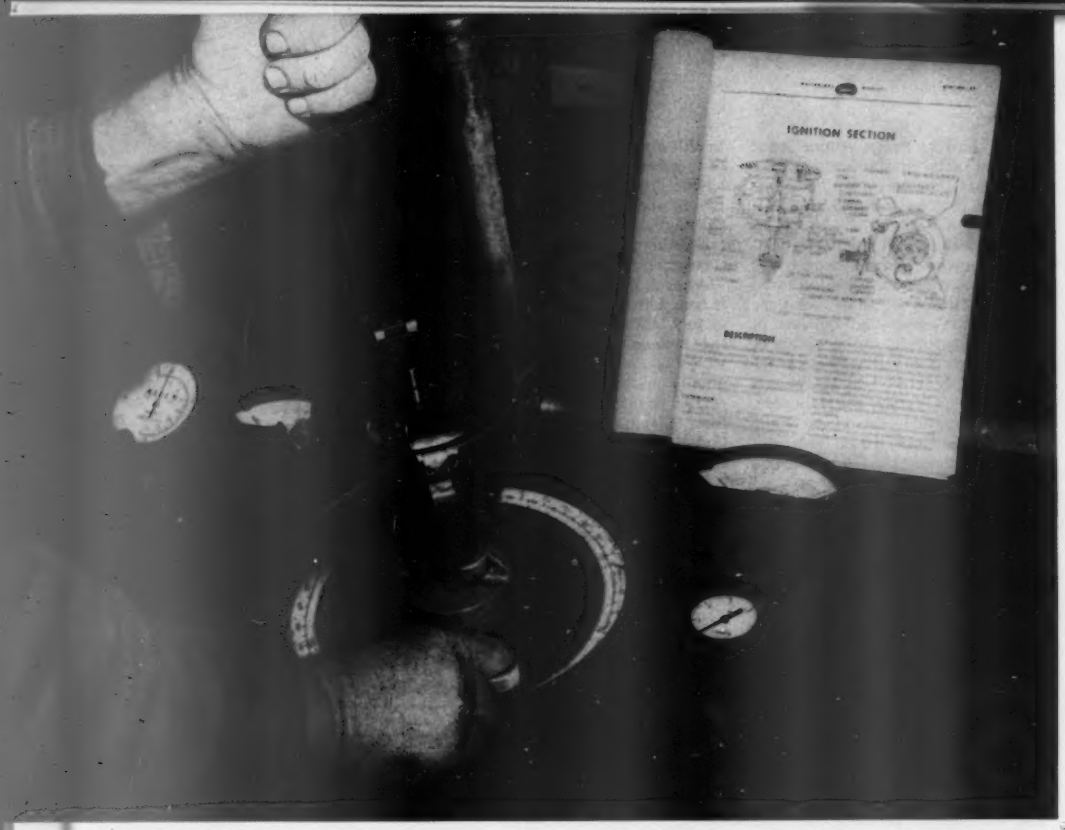
Use of Best Equipment

To sum up, the development of an alumni football charter service calls mainly for organized planning well ahead of the football season, plus the application of effective sales techniques aimed at a specific group of potential customers. Above and beyond that, the quality of the service itself is highly important. Assignment of old or broken down coaches to a group charter of this kind will create ill-will and cancel out an otherwise good job of planning and selling. The best available intercity coaches on the property should be assigned to this service. Likewise, only the most efficient and courteous drivers should get the call for these special alumni charter jobs.

Aggressive Promotion Needed

If properly organized and planned, with modern coaches assigned to each job, this kind of alumni football charter service would have a high "sales appeal" value, needing only an aggressive promotion campaign to bring the service to the attention of a group of potential customers who, consciously or subconsciously, are seeking a special and festive means of transportation for a special and festive occasion.

- **ALUMNI FOOTBALL CHARTERS** can put your idle equipment to work.
- **ALUMNI FOOTBALL CHARTERS** can brighten up your off-line revenue picture.
- **ALUMNI FOOTBALL CHARTERS** can produce a tidy net profit for you.



SYNCHRONIZING POINTS and checking advance in a 12 Lobe Delco $1111551 replacement distributor for a 12-cylinder 788-1 White engine. The most careful and expert handling is necessary to make sure that these points fire simultaneously.

In Making a Scientific Engine Tune-Up . . .

● THE PHRASE "tune-up" literally means correcting all electrical and mechanical engine adjustments to the original specifications as recommended by that particular manufacturer. The urgency for scientific correction applies to heavy-duty operations perhaps even more than it does to passenger cars. This fact is made obvious by the huge investments in fleet equipment and absolute necessity for profit return.

Many fleet shops, however, are equipped with modern electrical testing devices operated by personnel with know-how. As a result, these individual operations actually show a higher net per dollar investment with fewer road calls. Discussed here are some facts on instrumentation and procedures.

COMPRESSION ● Since any motor tune-up begins with compression efficiency it is recognized that such items as rings, valves, gaskets and cooling system are the first considerations in scientific analysis and adjustment. Once this foundation is established we find that engine analysis and tune-up fall into starter-battery relations, generator-battery circuits, ignition generator-battery circuits, ignition system efficiency and carburetion.

Two methods for testing individual cylinder compression and power balance are used. One method is to use a reliable compression gage on each cylinder through a given number of engine revolutions induced by starter. The greatest allowable difference between high and low cylinders is generally 10 per cent; 15 per cent below standard in any one cylinder, as given by the engine manufacturer, indicates need for correction.

Another, and more rapid, system for checking cylinder balance is to ground out one-half of the cylinders, setting carburetor throttle screw for fast idle (about 700 rpm). Then, using good vacuum gage or electric tachometer, short out, one at a time, the remaining live plugs. As each spark plug is shorted a noticeable drop will occur in tachometer or vacuum gage reading. At fixed throttle setting this drop should be uniform in each cylinder. After the live half are tested they are then grounded and the other section similarly checked. Any pulling cylinder that gives *less* needle variation when shorted is weak.

Defective cylinders, as indicated by either of above tests, can be traced to one or more causes as follows:

1) Incorrect tappet clearance
2) Burned or warped valves
3) Sticking valves
4) Broken valve spring
5) Defective head gasket

CHECKING ADVANCE CURVE in Holley Loadamatic distributor, on vehicle. This is a Ford 8MB engine powering a 8M2-88 Marmon-Herrington. The distributor relies entirely on manifold pressure for cruising and full load timing.

The Needle Will Tell the Story

6) Loose or broken spark plug
7) Broken or worn rings
8) Sticking rings
9) Broken piston
10) Scored piston or cylinder

The above outlined conditions frequently show up, during analysis, when vehicle is in for intermediate periodic checks as instituted by the operator. Prompt correction will raise unit economy and defer more serious repairs.

INTAKE SYSTEM • The intake manifold and air cleaner system should be carefully checked, at specified intervals, for irregularities. A vacuum gage properly used will indicate:

1) Defective gaskets
2) Loose manifold bolts
3) Warped manifold
4) Burned out heat riser
5) Carburetor bolts loose
6) Loose or broken connections to vacuum-operated devices.

Air cleaner should be serviced by cleaning thoroughly. These units on many bus installations are complex and should be periodically checked and fresh oil installed to the proper level, dust and atmospheric conditions governing mileage intervals.

COOLING SYSTEM • Another sustaining factor to overall engine performance is the cooling system. Inadvertent by-passing of maintenance here can result in lowered economy and heavy repair costs. In the category of regular motor tune-up is water pump and fan belt inspection. Radiator, engine block and all heater systems should be free of excessive scale and rust, cleaned out if dirty. Thermostat should be checked for efficient operation at manufacturer's specified minimum.

ELECTRICAL SYSTEM • Everything electrical is actually mechanical. The generator, from which stems the initial electrical energy for the automotive vehicle, is completely mechanical. This is true of the voltage regulator, relays, ignition distributor, switches and starter. Adjustments on any of these units is purely mechanical. However, the efficiency of their mechanical operation is measured by the quantity of voltage and amperage available, or passing through, any given point in the wiring circuit, which is also inertly mechanical.

VOLTAGE DROP TESTS • It can be seen that the foundation for all electrical tests is to be found in the use of an ammeter-voltmeter combination. There are a number of good ammeter-voltmeter instruments on the market. They all serve the purpose of measuring amperages and volt-

ages and can be considered the most important of all electrical testing devices. Battery, starter, generator, ignition and lighting system, all depend on a definite amount of voltage and amperage in order to operate correctly.

The wise bus service man, after checking batteries for gravity and break down, will make a thorough check of battery ground connections throughout vehicle. This can best be done by using the voltage drop test, employing the 1-volt scale (if available) on the voltmeter section of an ammeter-voltmeter instrument. Hooking instrument leads in parallel between any two points of a given circuit will indicate any loss. There must be current flowing, however, and while using the 1-volt scale he must never go across the battery or batteries. This would overload meter on that particular scale.

The necessity for current flowing has just been mentioned and a typical test would be to check the charging circuit using 1-volt scale. With engine running and generator developing 10 amp. or better, the voltmeter test should be clipped to good engine ground on one side and to grounded battery post with other lead. Since the meter now is in parallel between engine ground and grounded battery post, any meter reading at all would indicate resistance in the battery to engine grounding. This might occur between battery post and cable clamp, in the cable itself or elsewhere in the ground combination.

At certain points in the charging, ignition and lighting circuits there are allowable resistances. These are chiefly in the vehicle ammeter, switching arrangements, ignition points, starter cables under load, etc. Unfortunately for bus operators who deal with higher voltage and amperage values, some manuals supplied by electrical testing equipment manufacturers, are limited to 6-volt systems. In the absence of bus manufacturer's specifications the service man can ascertain voltage drop allowances on 12-volt systems by doubling the 6-volt tolerances.

Following the same procedure as outlined above the ignition system can be systematically checked for voltage drops with ignition switch on and distributor points closed but engine not running. Excessive voltage drops should be corrected before condemning or even testing ignition coil.

Using the ammeter-voltmeter, a check of voltage drop at battery during starter operation should be made. This is done by attaching voltmeter leads directly across battery posts, using proper scale on instrument for 12 volts or better (generally a 20-volt scale) for 12-volt system, and spinning engine with starter. With fully charged battery and cold engine the voltmeter should read not lower than nine volts. Warm engine being turned by starter will generally drop voltage to no less than 10 volts.

This voltage drop test will quickly indicate whether or not the starter, with its priority on battery drain, is lowering the voltage to a point where coil and ignition system will not function efficiently. Many a coil and/or condenser has been condemned and unnecessarily replaced because of excessive starter drain.

GENERATOR-REGULATOR • Continuing the use of the ammeter-voltmeter, after charging circuit has been checked for resistances, the generator output and regulator settings must periodically come under close scrutiny. Improperly set regulators can and certainly will lead to ignition troubles, shortened battery life, not to mention burned out generating and control devices. Specifications as indicated by the vehicle manufacturer should be adhered to as well as the special bulletins furnished by such component manufacturers as American Bosch, Leece-Neville, Auto-Lite and Delco-Remy.

IGNITION DISTRIBUTOR • The distributor is the very core of engine performance. Even carburetion will be affected by distributor action. With the advent of higher compressions (particularly Butane installations) it has become increasingly important to remove the distributor from the engine for complete analysis and correction.

This brings into focus another all-important piece of shop testing equipment. Under various trade names, this device is an instrumented motorized unit for driving the distributor at comparable engine speeds. While in operation distributor is completely checked for shaft-bushing wear, cam angle (point opening), point bounce, uniform firing degree intervals, mechanical governor advance and vacuum timing control. It has been conceded by most service men that these important functions can not be calibrated while distributor is in vehicle.

Excessive shaft-bushing wear causes uncontrolled cam angle variations and irregular firing. Point bouncing interferes with condenser action resulting in arcing and damage to points. The mechanical governor arbitrarily advances ignition timing with engine speed increase and should operate according to pre-specified curve. If it does not follow this curve the engine will be out of time at higher speeds no matter how diligently timing mark and pointer are synchronized at idling speeds. The vacuum control monitors the overall timing action in sympathy with specified manifold pressure which is proportionate to load. This device must advance and retard ignition timing with variations in these pressures.

All of the above tests and calibrations come within the scope of the distributor tester. An accompanying illustration shows a typical distributor analysis in the case of a 12-cylinder White Model 788-1. This Delco distributor #1111551 (replacement for original #11539) operates a 12 lobe cam with synchronized double ignition points and is a good example of the necessity for careful and expert handling.

FOR LOADAMATIC • In buses where Ford engines are used it will be found that the new Holley pressure type distributor should be given special periodic attention. This type of distributor relies entirely on manifold pressure for cruising and full load timing, there being no centrifugal advance weights. Timing control is actuated by vacuum operated diaphragm assembly. One side of this diaphragm is connected by linkage to the breaker plate and the other side is connected by a tube to the carburetor. Admitting carburetor pressure, which is less than atmospheric, to the lower side of the diaphragm induces variable advance in distributor timing in proportion to vacuum in the carburetor.

The only spring loading of diaphragm is at the advance or breaker plate. There are two springs, primary and secondary, which are adjustable at one end by eccentric posts. Correct advance curves are absolutely necessary on these engines if maximum economy is to be realized. The extremely critical vacuum advance mechanism, which operates in variations of hundredths of inches of vacuum, must be properly calibrated. This can be done on vehicle by using sensitive manometer with special sector and pointer (see illustration). This device has self-contained vacuum pump in manometer and sector is marked for Ford engines used in bus application. If distributor is removed from vehicle for checking by distributor tester, then it is recommended that a low reading manometer be used for fractional inch vacuum readings.

COIL TESTING • Coils should be tested after the primary ignition circuit has been checked for voltage drops. Again, several good coil testers are available but the service man should ascertain that the coil in question is not drawing excessive amperages (which will burn points) and just what the coil will produce in comparative voltages and milliamperes. Heating coil should be a part of test. Since it is frequently desirable to test coil on vehicle many service men prefer portable units.

CONDENSERS • Likewise, condenser action can be checked either on vehicle using one of the portable type condenser testers or bench tested at time of distributor removal. It might be pointed out that point burning and pitting is often erroneously attributed to condenser failure. It must be remembered that high voltages caused by improperly set voltage regulators, defective ground circuits and bouncing points is more often the direct cause of tungsten failure. High voltages cause higher amperages across any given resistance such as the coil primary circuit, of which ignition points are a part. Specifically, a condenser should be tested for capacities, breakdown and leakage.

HIGH TENSION • In laying ground work for actual "running adjustments," the high tension section should be gone over. Spark plug wires should be removed from distributor cap regularly and terminals cleaned if necessary. Some coil testers permit test for conductivity loss. That green stuff makes fine insulation just where it isn't needed. Rotors should be replaced when gap becomes too great and spring contact on top of rotor should have sufficient tension against carbon in distributor cap to prevent arcing and burning away.

IGNITION TIMING • Ignition timing begins to change almost as soon as a bus is returned to service after checkup or overhaul. This is due to contact arm wear at bumper block and contact points. This wear is not always proportionate and degree of dwell becomes greater which in turn retards spark. Wear of 0.001 at bumper block can decrease point opening by 0.002. At this point it should be emphasized that no service man will be considered a sissy if he uses a tension scale to measure contact arm tension when installing new points. Ignition component manufacturers specify correct tensions in ounces for all point installations and these should be adhered to. Too little tension causes point bouncing and burning. Too much tension will excessively wear away bumper blocks and pound out contacts.

Once the correct point dwell is established, either with distributor in testing device or by cam angle meter analysis with distributor in engine, ignition timing can be set. It is essential that engine be idling slow enough as to preclude any governor advance. The distributor rpm being one-half that of crank shaft speed should never be in excess of 250 rpm's while timing. This means a maximum engine idling speed of 500.

A good electric tachometer should be used to ascertain engine speed. This instrument will also be valuable in checking governor action, cylinder power balancing and ignition timing. Frequently cam angle meter and tachometer instruments are combined in one case and there is available a single meter with combination dial and manual selection of internal circuits. Regardless of brand, portability is important in making shop and yard tests.

TIMING LIGHT • If timing light is used it should be of sufficient brilliancy to operate in daylight and compact enough to be used in out of the way places. Such a light comes under the category of "power pack" construction with power transformer, vibrator and condenser either in body of light or contained in separate unit. Several such lights are available.

TACHOMETER TIMING • While engine manufacturers provide timing marks, it is true that after a period of service any carbon formation will, in varying degrees, change compression ratios. This factor collides with certain fuel octane ratings and may necessitate departure from specified timing setting. Many fleet operators are correcting this by using electric tachometer and loading engine at fast idle by use of ground out leads to one-half of cylinders, and setting engine speed at a quite fast idle, but under 1,000 rpm.

Using the sensitive or low speed tachometer scale, the distributor can then be advanced to highest rpm at that particular throttle setting (throttle stop screw must be set, with no throttle movement possible) and just beyond to a point where engine rpm starts to fall off. Carefully retarding distributor will bring rpm back to peak. The peak point should be noted and the distributor retards further until tachometer needle shows a definite tendency to fall off. Distributor is moved by light tapping and clamp on distributor should be sufficiently snug to hold the distributor in any given positions. Now, reducing engine speed to very slow idle by backing out throttle stop screw, but with same cylinders still shorted, throttle can then be cracked open for detection of detonation. Excessive pinging during this operation indicates that the particular fuel being used and engine condition requires further retarding of timing.

COMBUSTION ANALYSIS • Combustion analysis and carburetor adjustment are next. Tendency to have on hand rebuilt carburetors is to some extent precluding the necessity for spasmodic carburetor overhaul. There are considerable pros and cons as to the value of exhaust analysis but it seems to be the consensus that exhaust analyzers, intelligently used, can save money for any operation. Quick tests, either in the shop or yards, will determine at what degree of combustion efficiency an engine is running at idling and intermediate or cruising speeds (1,500—2,000 rpm). Full load or wide open throttle tests must necessarily be made during road operation unless, of course, a dynamometer is available.

Ideal mixtures measured in combustion efficiency or air:fuel ratio through exhaust analysis vary with some makes of engines. Consult vehicle manufacturer's specifications for data. In the absence of such specifications it may be assumed that satisfactory performance and good economy will result from the following readings on any reliable exhaust analysis:

Throttle Setting	Air Fuel Ratio Between
Idling	11.5:1 and 12.2:1
Cruising (Part load, road test)	14.4:1 and 14.8:1
Full Power (Full load, road test)	12.5:1 and 13.5:1

In making exhaust analysis with engine free running at intermediate or cruising speeds the differential between floor tests and part load during road test should be noted. Part load operation at cruising will generally result in about one-half division higher needle reading, as given above. Instrument portability here is a must.

Much can be said in regard to the necessity for accurate periodic tune-up. While theory and practice sometimes fail to coincide, the indisputable fact remains that thousands of engine miles are lost yearly because of inadequate engine analysis.

How To Service Engines Equipped With Sleeves

If your old sleeves are in fair condition, and you have a boring bar made especially for hard material, it may be worth your while to consider these instructions on . . .

1. **Installation of Wet Type Sleeves**
2. **Installing Dry Straight Type—Without Flange**
3. **Installing Dry Type With Flange—Slip Fit**
4. **Installing Dry Type With Flange—Press Fit**
5. **Finishing Sleeves To Desired Size**
6. **Parts Assembly And Run In Recommendations**

● TWO GENERAL categories of sleeved engines, the dry sleeve and the wet sleeve types, are in common use. The dry type is so named because it does not come in contact with the cooling agent. The wet sleeve normally has an area known as the water jacket section, exposed to the coolant.

Wet type sleeves are fitted freely into the motor block but are sealed from combustion by head gasket—from water and oil by synthetic rubber sealing rings located near bottom end of sleeve. Two methods of retaining these seals are currently employed; one where the sleeve is grooved for rings and the other having grooves cut into block. From one to three rings will be found in use today.

Dry type sleeves are used in two forms, with a flange or collar at the top and the plain straight type. Fitting dry type sleeves requires more care and skill for reasons to be told later. Two distinct methods of fitting are currently in use by engine builders. The original "Press" or "Interference" fit is still most widely used although recently a trend toward the "Slip Fit" is noted.

Difference In Fit

There is a difference between "Slip Fit" and "Slop Fit." A metal-to-metal contact between sleeve and block is needed to insure proper dissipation of heat to cooling system. If we fail to get this by allowing too much clearance and do not use a metallic seal, oil or combustion products may work their way between sleeve and block, thereby creating an insulation which will obstruct normal heat passage. Voids will be filled with the seal permitting heat to pass through unrestricted.

When an engine reaches the overhaul stage, many operators install new sleeves without too much checking into condition of the old ones, particularly if they are the hardened grey iron sleeves. These are difficult to rework and without proper tools the time spent would not warrant such rework over the cost of new sleeves. However, if the old sleeves are in fair condition, and you have a boring bar made especially for hard material, you may find it profitable to bore and hone for oversize pistons. It is safe to go up to .030 over except on dry sleeves with a wall thickness of $\frac{5}{64}$" or less.

1. Installation Of Wet Type Sleeves

1. Old sleeve can be lifted out of place by first tapping from bottom to break the seal.

2. Scrape out all deposits of rust, scale, carbon, etc., from machined areas in block which come in contact with sleeve. Follow up with piece of medium fine emery paper until bare

metal is seen—particularly in sealing ring grooves.

3. Round off the top edge of the hole in bottom of block that the sealing rings pass through. This is important as a rough edge will cut or turn sealing rings which can result in a leaky installation.

4. Try new sleeve in cleaned block to be sure it fits properly. If everything is right, you should be able to turn the sleeve by hand. Be sure the sleeve flange rises above top of block from 0.002 to 0.007 in order to insure a good crush on head gasket.

5. If the sleeves are correct and fit properly you are ready to install with seals. Place sealing rings in block or on sleeve as the case may be, taking care not to overstretch them. The inside of seals should hug the sleeve and not be twisted or cramped.

6. Apply a generous coating of one of the following materials on the seals: Hydraulic brake fluid, green soap, potash soap, or lard, oil; work the sleeve gently into place as far as possible by hand, then tap lightly on board held on top of sleeve to settle in place.

7. Fill block with water and check for leaks before assembling rest of parts.

2. Installing Dry Straight Type—Without Flange

This type sleeve is generally used to salvage blocks having cracked or excessively worn cylinders. Because it has no collar to stop movement in cylinder it is usually installed with an "interference" fit of 0.0005 in. (½ thousandth) per inch of diameter. If entire block is to be sleeved, do not bore or sleeve each cylinder in succession. To avoid block warpage, start with No. 1 cylinder and do all odd numbers, then come back to No. 2 and complete even numbers.

The necessary steps to obtain proper "interference" fit are:

1. First find "actual" O.D. of sleeve in this manner: Mike sleeve O.D. in three places at bottom (approximately 120 deg. apart) and three places at top (approximately 120 deg. apart)—add together all six readings and divide by six. This will give you the "mean" O.D. of sleeve from which to figure size of hole to be bored. This should be done after cutting sleeve to same length as block. From this figure subtract 0.0005 in. for each inch of bore size—0.0015 for three inch bore, 0.002 for four inch bore, etc. As an example let's say we have a sleeve with actual O.D. of 4.001 in. Subtract 0.002 in. and you have 3.999 in. which is the size of hole necessary for "interference" fit.

2. Centralize boring bar in hole by "cats paws" or other means provided with your bar.

3. Never try getting hole to size with one cut. The final cut must not be more than 0.040 in. on diameter in order to end up with a round, straight hole, cut to predetermined size.

4. Round off lower O.D. corner of sleeve and top of block. Cover sleeve with coating of anti-friction oil or hydraulic brake fluid. Start sleeve squarely and draw into place with "sleeve puller" or press in place with "hydraulic press." Installation can also be made by "heating block" or "shrinking sleeve" with dry ice.

5. On alternate method where a "slip fit" can be given this type sleeve is possible with extra work viz.,

a. Find "actual size of sleeve per note #1.

b. Bore block per notes 2 and 3 from 0.001 to 0.0015 larger than sleeve O.D.

c. STOP the final bore cut at a point 3/16 in. from bottom of block.

d. Turn a step on bottom O.D. of sleeve 3/16 in. long and 0.005 to .010 in. smaller than step in block. This provides a small shoulder to keep sleeve from moving downward.

e. It is advisable to try the fit of each sleeve after honing block. If proper clearance is provided, you will be able to push about ½ of sleeve in bore by hand.

f. Round off outside corner of sleeve at step and top of block with a fine file or stone. Clean all grease and oil from sleeve O.D. and block bore with a good solvent such as carbon tetrachloride. Cover entire bore with "metallic seal" or "cylinder sleeve seal" and insert sleeve immediately, wiping additional seal on sleeve as it is pushed in. Tap sleeve with mallet or plastic hammer to settle all the way down. Wipe off all surplus seal from top and bottom of block.

g. Finish hole to size.

3. Installing Dry Type With Flange—Slip Fit

1. Remove old sleeve with hydraulic or screw type puller.

2. Hone out block with coarse stones from 0.001 to 0.0015 larger than "actual" sleeve O.D. If distortion is present and large areas in block do not clean up it is necessary to enlarge block for a sleeve with an oversize O.D.

3. After honing or boring, check clearance by trying sleeve in block. If correct, about ½ of sleeve can be pushed in by hand.

4. Round off lower outside corner of sleeve and top of block with a fine file or stone. Clean all grease and oil from sleeve O.D. and block bore with a good solvent such as carbon tetrachloride. Cover entire bore with "metallic seal" or "cylinder sleeve seal" and insert sleeve immediately, wiping additional seal on sleeve as it is pushed in. Tap sleeve with mallet or plastic hammer to settle all the way down. Wipe off all surplus seal from top and bottom of block.

5. If block was not originally fitted with flanged sleeves it will have to be counterbored to receive flange. Bore counterbore diameter 0.005 in. larger than flange O.D. of sleeve. Mike the width of flange and make depth of counterbore from 0.001 to 0.004 in. less.

6. It is recognized that methods of installation different than outlined herein are in use today with apparent success. Some prefer fitting sleeve with "interference" while others use more clearance. Theoretically, all sleeves should fit metal-to-metal to insure combustion heat transfer to the coolant, but experience with slip-fit sleeves has been satisfactory enough on the whole to warrant their use, particularly when the seal has been used. There may be, as stated, some choice in the matter.

4. Installing Dry Type With Flange—Press Fit

1. Remove old sleeve with hydraulic or screw type sleeve puller.

2. Run coarse hone through bore to remove scale, carbon, lacquer, etc. Scrape all deposits from block counterbore so as not to interfere with the entry of flange on new sleeve.

3. Check size of cleaned out hole with actual sleeve O.D. Some of the original interference may be lost by cleaning up bores but do not worry if there still remains at least a line-to-

line fit.

4. Round off lower O.D. of sleeve; apply coat of anti-friction oil or hydraulic brake fluid. Start sleeve squarely, draw into place with "sleeve puller" or press in under hydraulic press.

5. It is usually necessary to finish bores of pressed-in sleeves to obtain proper piston clearance. If so, follow procedure given under Finishing Instructions.

5. Finishing Sleeves To Desired Size

1. Bore semi-finished sleeves to within 0.001-0.002 in. (one or two thousandths) of finish size desired.

2. Rough hone to within 0.0005-0.001 (one-half to one thousandths) of finish size. Use a fast and steady up-and-down movement of hone so as to produce stone marks with a well-defined diamond shaped pattern. Expand stones gradually—don't use excessive pressure as you are apt to rupture the granular structure of the surface metal. When stones "squeal" excessively they are either glazed or too hard for the job. Glaze can be broken by moving the stones up and down in bore, without rotating if sufficient pressure is applied. Score marks in finish indicate that stones have loaded spots. These can be removed by dressing off with another stone.

3. Change stones and finish hone to final size.

4. Final finish should have a dull grey color with rough honed diamond shaped pattern still visible.

5. If your hone is one designed to be operated dry, follow instructions given by manufacturer.

6. Roughing stones suggested for wet honing.

a. Unhardened sleeves and blocks: C150 JV or KV; C180 JV or KV

b. Hardened sleeves: C100 JV or KV; C120 JV or KV

7. Finishing stones suggested for wet honing.

a. Unhardened sleeves and blocks: C320 IV or JV; C400 IV or JV

b. Hardened sleeves: C180 HV or IV; C220 HV or IV

Explanation of Stone description—Large Letter "C" means silicon carbide, numbers 80, 100, etc., size of grit; letters J, K, etc., the hardness; V means Vitrified bond.

8. Honing Lubricants—Kerosene or mineral seal oils are satisfactory, however, most oil companies sell a "honing compound" which can be blended with either and should be used for best results.

9. After finish honing, check piston in bore with feeler to be sure you have recommended clearance.

10. Cleaning:

a. Wrap a piece of Wet-or-Dry paper (320-400 grit) around stone, dip in light oil and run up and down the bore 15 to 20 times with hone expanded to touch gently while rotating. This will pick up the greater portion of abrasive particles and metal fragments. Crocus cloth will also be satisfactory.

b. Use stiff bristle brush and scrub bore vigorously with heavy solution of ordinary soap suds. Rinse off with clear water.

c. Hold a copper penny against cylinder wall with forefinger and slide it up and down several times. If the edge of penny is cut easily, it means the finish is too sharp and will injure the piston rings. Run paper or crocus cloth through bores again until this sharpness is removed.

d. Apply generous coat of heavy motor oil to bore and wipe out well with soft paper toweling or paper handkerchief.

6. Parts Assembly And Run In Recommendations

1. Check piston clearance at sealing ring section of sleeve to make sure you have the amount recommended as improper assembly of sealing rings can cause sleeve distortion and loss of clearance.

2. New sleeve assemblies alone are not always the only requirement to bring the engine back to top performance. Worn valve seats, valve guides or bearings and weak valve springs, poor carburetion, etc., will all lessen the performance and should be taken care of at the same time.

3. When assembling set screw type pins, you must line up the hole in pin with the hole in piston before starting screw. Forcing line-up by turning screw will stress the piston material and probably crack it.

4. Where the rod is clamped over pin it is extremely important to tighten bolt carefully so as not to distort piston pin. Follow carefully the amount of torque pounds specified by the engine builder, if available. If not, use ordinary open end or socket wrench without extensions such as a piece of pipe. Plenty of pressure can be applied with the wrench alone. It is good practice to check pin fit in piston to see whether you have affected it by tightening the bolt. If fit has tightened any, it is an indication that bolt has been tightened more than necessary and should be backed off slightly. A distorted pin will gall in the piston causing piston to seize in cylinder.

5. Try each ring in bore before assembling on piston to determine ring gap. Some rings have "top and bottom" sides and must be installed with proper side up to obtain the desired performance. Use ring compressor to close rings for easy installation and insurance against breakage.

6. Cover all rings and piston skirt with a high grade light oil to provide lubrication until oil pump starts circulation and spreads a film of oil on cylinders.

7. The final phase of the assembly and one of the most important is the manner in which the cylinder head studs are drawn down. Follow engine builder's specifications for torque pounds and proper sequence in the tightening operation. If not available, common practice for tightening sequence is to start at the center studs and progress outward, skipping back and forth from one side to the other, until all are down. For general use, the following number of pounds will suffice, if you do not have original specifications.

⅜ bolt	25 to 30 ft. lbs.
7/16 bolt	50 to 55 ft. lbs.
½ bolt	80 to 85 ft. lbs.
9/16 bolt	110 to 120 ft. lbs.
⅝ bolt	140 to 150 ft. lbs.

8. After the engine has been closed up and thoroughly checked for proper ignition, timing, carburetion, etc., fill crankcase with a good grade non-compounded light oil. Run engine for two or three hours at a speed sufficient to keep the oil pressure at normal. Do not idle during break-in as parts of the engine may fail due to lack of oil. Increase speed gradually to allow proper wear-in of new parts. Drain oil after break in and fill crankcase with fresh oil.

9. Do not keep cold water running through cooling system during break in. Fill up radiator and allow engine to reach its normal operating temperature.

10. Oil cleaner and air cleaner should be serviced after the engine overhaul to assure maximum cleanliness and avoid injury to the new parts.

THE TICKET WINDOW

A DEPARTMENT FOR THE TRAFFIC MAN

Short Haul Religion In Richmond

IF MORE OF the Richmond faithful don't show up in church this summer, it will be from lack of zeal and not transit facilities. Virginia Transit Company, Richmond, is offering free rides to church on all its buses operating within the city limits on Sundays during July and August. And Lee F. Davis, vice president and Richmond division manager, reports the guest program is being well received.

Each Sunday, between 8:30 a.m. and 1:00 p.m., any rider can board a VTC bus, tell the operator he's going to church, and disregard the fare box. And the same for the return trip.

Naturally, ministers have been happy to cooperate with VTC in promoting this Sunday guest policy and, as the word has gotten around, more and more riders take advantage of it. Habits, though, are hard to break, even on Sunday; and VTC bus drivers report that some church-goers continue to pay the fare in accustomed fashion.

Wide World Photo

THEATER-TV AT WASHINGTON'S RKO KEITH'S, WHERE HOUSE WAS PACKED FOR FIRST TWO VIDEO CIRCUIT FIGHTS.

Time To Make TV An Ally

A NEW YORK TIMES survey on TV reported these findings: evening bus schedules reduced, television held definitely responsible (Greenwich, Conn.); marked decline in evening traffic owing to TV, say local transportation companies (Lansing, Mich.); trolley and bus patronage off, but this could be attributed to factors other than TV (Columbus, Ohio); Public Service Company thinks TV reducing fare receipts (Kansas City, Mo.).

And recently the Lima (Ohio) City Lines, Inc. prepared to go out

BRAVING "ENEMY" TERRITORY, stylish Service Aides of Niagara Frontier Transit System, Buffalo, "invade" local parking lot, pass out folders explaining the savings from using transit.

of business. Reason, according to President John Cable: TV was keeping people at home when they might otherwise be going out and using buses.

No Denying Video's Advance

None of these comments will particularly surprise transit executives, who for some time have been blaming video, among other factors, for riding declines. At this point it is generally acknowledged that TV is changing the pattern of riding habits, as it is that of everyday living. And it is also widely admitted that, in some cases, TV has been made a convenient whipping boy in attempts to explain riding losses.

In any case, though, no one denies the relentless advance of video. And, because of this, transit carriers have no choice but to grant its pervasive effect and to try to find ways of progressing along with it.

Expressing this viewpoint more pungently, a speaker at an ATA regional convention remarked it was time for carriers to stop crying over TV's bite into riding, and instead to make use of TV as an ally. Perhaps the time is at hand for this, through the recent shift of fight telecasts from the living-room to the theater TV screen.

On the strength of experiments with theater-TV, it looks as though those carefree nights of watching the big fight at home, or "in your favorite tavern," are over. Or virtually so for major bouts. From now on more and more fights will be telecast on a special circuit to theaters in key cities, leaving the local fight fans staring at some faded old film or perhaps a panel of alleged experts on child guidance.

Small But Significant

Though theater-TV is just getting underway, there seems no doubt that it packs a significant riding potential, one that the average movie house in TV areas now fails to do. The first experiment with a blackout of home viewers was the Joe Louis-Lee Savold heavyweight scrap last June. Except for customers who watched the battle in New York's Madison Square Garden, no one in New York saw the bout. But it was viewed by packed houses in theaters in other cities such as Baltimore, Washington and Chicago.

The International Boxing Club, promoters of the fight, found this first test so successful that its next standout struggle, between Jake LaMotta and Bob Murphy, was telecast to 11 theaters in eight cities. And again New York viewers were blacked out, though the fight was staged at New York's Polo Grounds. For this bout, 10 of the 11 theaters reported capacity crowds, with one reporting better-than-average attendance for a Wednesday night.

Continuing the pattern, IBC telecast the Rex Layne-Rocky Marciano bout, from Madison Square Garden, to 11 theaters in Albany, Philadelphia, Baltimore, Washington, Richmond, Pittsburgh, Cleveland and Chicago.

Trend of the TV-Times

Giving every indication that this theater-video fight circuit is on the way to becoming an established fact, there are now roughly 100 theaters slated to be equipped with TV facilities before the end of the year. As a bloc this group could outbid any advertiser on home TV, and still not hurt the gate at the event itself.

It's too early, of course, to tout theater-TV fights as a major stimulus to transit riding. However, the development should serve notice on carriers that it's worthwhile keeping up with TV trends and tying in with them when possible. Also, this is only an indication of what is to come in the way of making local fans pay to see a sports event, while telecasting the contest to other cities. One expert has forecast the same development in relation to almcst all major sports spectacles.

Presently, as has been widely publicized, The National Collegiate Athletic Association is advocating a moratorium this fall on the unrestricted televising of top college football games. Again, altogether apart from sports, the National Broadcasting Company is planning full-length movies for theater use, which star TV standouts such as Berle, Durante and Cantor.

These are just a few of the happenings which are bound to dislodge home viewers from their living-rooms, and restore them as more frequent users of transit.

It's pointless to guess just how much significance all this will have to carriers. But one thing seems certain: it's time for carriers to regard video as a possible business-builder, rather than to dismiss it as an upstart competitor.

New York Commuting Trend Towards Buses and Cars

TRANSIT CARRIERS may not get much comfort from the report, but a recent analysis of commuting between Manhattan and its suburbs shows that commuting by rail is down, travel by passenger car and bus is up.

In an exhaustive probe of commuter trends since 1930, the Regional Plan Association found that there has been a steady shift from rail to cars and buses, with the implication that it was predominantly to cars. And this shift to cars, the report deduced, was largely responsible for the city's increasing traffic congestion.

The major shift from railroad commuting, the association found, has occurred in New Jersey, owing to a lack of direct connections of most rail facilities with Manhattan, particularly mid-Manhattan. Auto and bus travel between New Jersey and New York City has jumped from 19,850 persons in 1930 to 80,000 today, while rail travel dipped from 111,600 to 78,200.

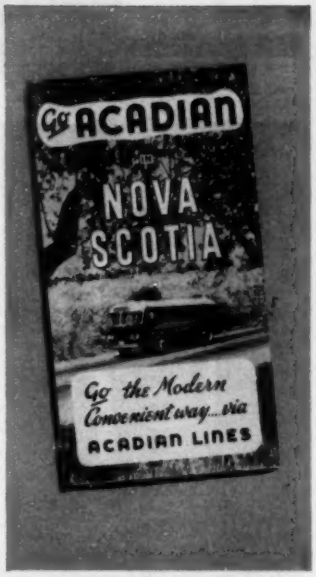
In the Westchester-Fairfield area autos and buses carry 10,000 daily now, against 6,000 in 1930. Long Island buses and cars take 28,400 into the city now, compared with 12,200 in 1930.

Among other findings, the association surprisingly discovered that the total number of commuters now is but 357,750, compared with 301,250 in 1930, which nails the popular notion that New York draws from 500,000 to 1,500,000 from the suburbs.

Concerned with the rail losses, the report pointed out that too much money had been spent on highway development and encouraging mass movement of motor vehicles between the city and its suburbs. This, it said, had created the biggest traffic jam in history and cost railroads thousands of commuters they cannot afford to lose.

The report recommended that there should be a searching inquiry into the "present policy of allowing railroad systems to remain static while investments are concentrated on vehicular traffic arteries leading into Manhattan."

The report failed to give any solution for relieving the city's traffic jam, since this was not its primary concern. One such suggestion might have been: stimulate more travel by bus and less by passenger car.



Acadian Folder Gains Riders and Good Will

SIMPLY BY adding some extra thought to a routine service, Acadian Lines, Halifax, Nova Scotia, has made an effective public relations move with its latest promotion piece on the company's operations.

Ostensibly just another schedule of Acadian runs, the attractive brochure is that and much more. As prepared by Ralph Pepper, Acadian traffic manager, the booklet quickly disposes of basic schedule information, and the bulk of the compact folder is devoted to a tasteful presentation of inviting scenes and descriptions of Nova Scotia's natural beauties. This service, of course, is what any tourist might expect, but the company has added a special touch by the inclusion of an ingenious map of the country.

The particular finesse of the booklet lies in the fact that, while it does not belabor the selling message, it still gets its point across neatly and effectively. For instance, each one of the attractive scenes shows an Acadian bus pleasantly rolling along in the picture. And the reader is reminded that it's smart to "Go Acadian" for economy and comfort.

The map takes up the entire inside of the brochure, as it is unfolded. It is a good example of how some additional effort can make a commonplace information folder become a solid bit of public relations.

Costs Climb For Operating Those Passenger Cars

TRANSIT'S CONTENTION that bus, instead of car travel, is a shrewd economy, got some fresh ammunition recently from the American Automobile Association. Costs of owning and operating passenger cars in the U. S. have increased about six per cent during the past 18 months, according to AAA. On the basis of figures from a cost accounting firm, AAA said the average total of car operation costs this year will hit $861, as compared with $815 last year.

As applied to cars in the low-priced class, a breakdown shows that fixed costs of such items as fire and theft insurance, property damage and liability insurance, license fees and depreciation for cars driven under 18,000 miles now average $533, against about $506 in the summer of 1949.

AAA pointed out that the actual cost will vary with the make and model of car, and geographical location among other considerations. And, in San Francisco, the city planning commission has made a study which shows that a typical San Franciscan can pocket between $30 and $50 a month if he rides the Municipal Railway to work instead of using his own car and parking in a downtown garage.

Further, the study revealed, even if the car owner carries neighbors to work, who share the expense, the lowest possible cost to the individual is $8.92, compared with the $4.50 monthly cost of public transit.

Despite these findings, however, the report dolefully points out that less than half the citizens of San Francisco use public transit to get to work. And the car owners among them could save $30, $40 or even $50 a month by doing so.

More carriers, though, should realize that this sort of data gives them a strong selling tool; and they should keep drumming away with it. For, to return to the AAA report, the steadily climbing cost of car operation may soon force car owners to heed these findings.

HOWJADOITS

PRACTICAL EXAMPLES OF HOW ALERT MAINTENANCE MEN ARE CUTTING COSTS AND IMPROVING EFFICIENCY

1. **HANDY HOIST** consists of pair of telescoping tables which manipulate . . .

2. **DIFFERENTIAL ASSEMBLY,** mounted to upper table of unit. Jack can be . . .

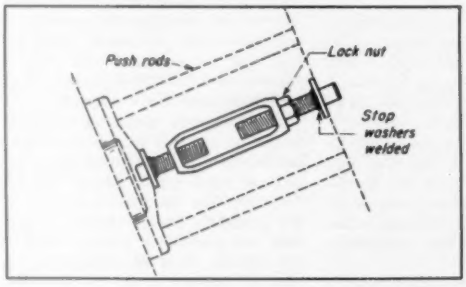
3. **USED IN A PIT,** or under a lift. It is easily handled as shown when . . .

Telescoping Differential Hoist

By Edward J. Simpson • *Supt. Maintenance*

Interstate Power Co., Dubuque, Iowa

NO HORSING around with ropes or half-hipped scaffolding to get a differential carrier assembly in place in the Interstate Power Co. garage in Dubuque, Iowa. We make use of the handy hoist



Keeping Valves Tight

By J. H. Delperdang • *Motor Rebuilder*

Sioux Transit Co., Sioux Falls, S. D.

SOME TIME AGO the Sioux Transit Co. replaced the Mercury engines in several buses with the Ford six-cylinder engine. The only trouble experienced with the latter was that the self-locking adjusters on the valve lifters would loosen up. They just would not stay set, and it was difficult to get them out without going to the trouble of removing the camshaft.

After some thought, we devised a very simple cure for the problem. First, we removed the valve and then the adjuster bolt. Then we took an ordinary ⅜ in. SAE nut and split it so as to make two thin nuts from one. These thin nuts are used as lock nuts. One of these thin nuts is placed on the valve adjusting bolt and the bolt then screwed back into the valve lifter. The assembly is then tightened and, as a final step, the valves butt-ground for clearance.

If the valves need adjusting in the future this can be done by unlocking the lock nut and turning the valve lifter bolt until the proper valve clearance is obtained, after which the lock nut is again tightened. With this arrangement the valves will stay put, we have found to our satisfaction.

4. ELEVATED to near maximum height with differential assembly in place.

shown here and which was made in the shop from materials readily available even in these days of scarcity. As shown the device consists of a pair of telescoping tables which are raised or lowered by means of a screw. Here are the essential construction details.

THE UPPER TABLE, which is made from a 24 by 34 in. piece of ¼-in. boiler plate with four legs made from 1½ in pipe about 38 in. long welded in place. On the top surface of the table weld a 6 by 8 in. piece of channel iron drilled for two ½ in. bolts as shown. This serves as the anchorage for the differential pinion companion flange. Two 6-in. lengths of ½ in. pipe also are welded to the top so that when ½-in. bolts are inserted therein an adjustable cradle is formed for the differential assembly.

THE LOWER TABLE is formed of two pieces of ½-in. boiler plate of the same size as the upper table; one forms the top, the other the base of lower table. The legs in this instance are formed of 2-in. pipe 44 in. long and so arranged that the legs of the upper table can telescope into them. A hole is drilled in the center of the top plate of the lower table to allow free passage of the height adjustment screw which is obtained from an ordinary screw-type bumper jack. The screw-nut of this jack is welded to the top surface of the lower table.

THE TWO UNITS are now ready to be assembled with the legs of the upper table; inserted into those of the lower table. The bumper jack has a swivel-jointed base and this is welded to the under side of the upper table as shown in one of the photos. A discarded steering wheel welded to the lower end of the screw serves as means to operate the screw which raises and lowers the table. To speed up this operation a spinnerknob can be employed. Four casters mounted to the base of the unit provide easy portability.

Got any ideas that have saved you time and money? We will pay $5, $10 and up for every one we publish. Send them to:

HOW I ADOITS EDITOR
BUS TRANSPORTATION
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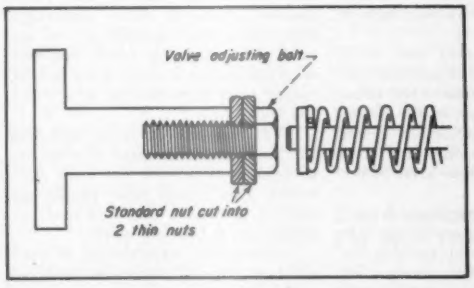


Small Jig—Big Job

By Henry R. Menegus
Greyhound Lines, Belvidere, N. J.

A SMALL JIG made up in quick order to do a big job, and return the bus back on the road is shown here.

It happens that once in a while the stud that holds the clamp over the push rod rollers snaps off, not only resulting in a very noisy motor but the added danger of other parts breaking. Removing of this broken stud can be a very tough job.

To make the jig, obtain a turn buckle of the size shown in the diagram. Cut off both ends and weld two washers, which act as stops. The washers are welded about one half inch in from the ends. On one end place a nut, which, when in place and tightened, acts as a lock. This completes the jig.

Screw the turn buckle so that it will fit in place. One end fits into the hold down clamp where the stud usually goes. The other end fits under the cylinder head. This being set, lengthen the turn buckle until the clamp is drawn down snugly. Then tighten the lock nut so that the buckle will not come loose. Replace the push rod cover, and the job is complete. When the engine does have to come out for overhauling, or for any other reasons, the broken stud can be removed and repaired.

NEWS OF THE INDUSTRY

Burlington, American Merger Okayed, Transcontinental Bus Line Created

● THE INTERSTATE COMMERCE COMMISSION has approved the merger of Burlington Transportation Co. (Burlington Trailways) into American Buslines, Inc., thus has created a transcontinental bus line which affords the only New York-San Francisco service operated by a single bus company under one management.

In putting its seal of approval on the merger, the ICC said that it would tend to bring financial stability to the combined operations because funds required to finance the system operations in an adequate manner would be made available under terms which American (the surviving company) should not find unduly burdensome, particularly since the passenger traffic moving over the combined routes is increasing.

Proposed financing, said the commission, would provide funds urgently needed on reasonable terms for purchase of new equipment, rehabilitation of terminals for the convenience of patrons, insurance, discharge of pressing obligations, and working capital. Merger would strengthen the financial position of the unified operations and would permit American to provide an improved and more active service and to compete in a more effective manner with existing carriers, and merger "may properly be found to be in the public interest."

In the financing deal, American was given permission to issue not more than $2,625,404 in notes, 10,413 shares of five per cent cumulative preferred stock, par value $100 each, and not exceeding 145,791 shares of common stock, par value $1 each. In addition, American may assume Burlington obligations not to exceed $440,823.

In granting the application for the merger, ICC ordered that four other bus lines go along with the deal. American is to gain control through stock ownership of Denver-Colorado Springs-Pueblo Motor Way, Inc., of Denver; Denver-Salt Lake-Pacific Stages, Inc., also of Denver; Gibson Lines, of Sacramento, Calif.; and Muscatine, Davenport and Clinton Bus Co., of Chicago.

The combined operations of American and Burlington cover about 18,000 route miles, some of them duplications. T. L. James, president of both companies, said at the time ICC approval of the merger was announced that now American can offer the only bus service from New York to San Francisco with but one change—at Omaha. Burlington's routes connect with those of American at Chicago, St. Louis, Kansas City and San Francisco; with Gibson's routes at Sacramento; with Motor Way's routes at Denver; with Stages' routes at Denver and Salt Lake City; and with Clinton Bus' routes at Davenport.

Century of Progress Is Transit Day Theme

The little figure you see over this story represents the theme of "One Hundred Years of Transit Progress," symbolizing the American Transit Association's third observance of Transit Progress Day, which this year falls on Monday, Sept. 24.

The year 1851, says the ATA, marked the beginning of public transit as an industry because of the widespread acceptance then of the horsecar in city transportation. In a few large cities the nucleus of transit service was in operation even before 1851.

Today—one hundred years later—260,000 men and women in the U.S. derive their livings from running the public transit industry in nearly 1,400 communities. More than 80,000 rapid transit vehicles — streetcars, trolley buses and buses—are now in daily operation. It's a far cry, as the ATA puts it, from the few horsecars which started the industry a century ago.

The association is sending out promotion kits to members and to allied industries and business firms joining in the celebration of the day.

Table of Events

September

12-14—National Association of Motor Bus Operators annual convention, Chicago.

October

1- 4—American Transit Association annual convention, Cincinnati.

29-31—SAE National Transport Meeting, Chicago.

Seattle Mayor Favors Subsidy for Transit

Mayor William F. Devin of Seattle is one city executive who takes an active interest in transit affairs. His latest suggestion: an out-and-out subsidy for the Seattle Transit System.

However, the Seattle Transit Commission has given no indication of requesting a subsidy. "I don't think our present plans even contemplate a request for a subsidy," said Bruce Shorts, only member of the present commission who will retain his post when a new commission takes over on Jan. 1, 1952.

The mayor went ahead, though, and this is what he said:

"Transit's problems are the city government's problems and their solution will have the most profound effect on our welfare as a community . . . expansion of mass transportation facilities is the realistic long-range answer to Seattle traffic congestion. But rather than expansion, we are now witnessing the exact opposite, with the system hauling fewer people, rather than more people, ever since the war.

"With each fare increase, including the latest one, passenger volume has dropped and service has been curtailed. This means more people are driving their own cars and that our congestion is growing worse.

"Inescapably, expenditure of very substantial public funds is involved and the question is what type of expenditure will be most productive of results in traffic relief. It always has impressed me as rather unrealistic to pour millions of public funds into highway construction to relieve congestion but none into expansion of mass transportation to accomplish the

same result, in part at least."

The Seattle mayor posed these as "fundamental" questions:

"Is transit primarily a public service or is it first and foremost a business operated on a profit and loss basis? As transit's operational costs continue to rise, shall service be curtailed, fares be raised, fewer people hauled? Or should funds from some other source be found to meet the costs, increase the service and make the system sufficiently attractive that the public will increase rather than decrease its use?"

Roland M. Wulf, chairman of the Seattle Chamber of Commerce Public Carrier Division, attacked Mayor Devin's suggestion as "socialistic." Myron C. Law, a member of the mayor's advisory committee on traffic problems, expressed as his opinion that "any special facility should be paid for by those who use it."

Wide World Photo

GIANT JAM tied up traffic in the nation's capital when Capital Transit Co. employees struck, forced police to relax parking regulations. The walkout was settled in three days, with 3,400 Amalgamated members granted a 15-cent hourly pay increase plus fringe benefits.

CTC Needs Fare Hike As Result of Strike

No sooner had Capital Transit Co., Washington, D. C., resumed normal operations after the three-day strike by the AFL transit employees union than it had another fight on its hands putting through a fare increase.

The company wants the District of Columbia Public Utilities Commission to leave city fares at 15 cents, to which they were raised a year ago. But it also wants to have the three-for-40-cents tokens and the $2 weekly pass dropped.

The new union contract will nick the company an estimated $1.5 million more a year. This provides for a 15-cent hourly wage increase, bringing operators' top rate to $1.70, and three cents in "fringe" benefits. The 15 cents is within the 10 per cent wage stabilization formula and does not need government approval.

The "fringe" benefits, however, need such approval. They are: Fourth of July and Labor Day, added to Thanksgiving and Christmas, as paid holidays for operating personnel; pension increase from $50 to $70 a month, with the company paying two-thirds of the cost; three weeks paid vacation after 10 years, instead of after 15 years; and reclassifications and upgrading for shop workers.

The big issue behind the strike was not wages, but seniority for non-operators. For them, the seniority clause in the agreement covered promotions, but did not cover layoffs and recalls. The union won its point, but the company was able to subdivide the employees into a number of groups with substantially the same duties for the purposes of seniority.

With the strike situation out of the way, Capital is preparing to present its case for a fare increase—the fourth to be asked in four years—to the Public Utilities Commission.

This year's appeal, however, is expected to differ from the others in many ways. Many of the principals of the previous three have been replaced, and as a result of successful consumer-intervention in the Washington Gas Light Company rate boost, additional intervenors are anticipated.

Col. Bingham Has 'Formula' For Sick Transit Systems

Col. S. H. Bingham, chairman of New York City's Board of Transportation, warned in a Los Angeles address of dire transit crises coming to cities throughout the country because of soaring costs and increasing traffic congestion.

Then Col. Bingham offered a formula to assure adequate service on a sound economic basis.

Col. Bingham described his plan as "applicable in broad outline to most cities," and said it would minimize the necessity for fare increases. He announced it at a recent joint meeting of the Metropolitan Traffic and Transit Committee of the Los Angeles Chamber of Commerce and the Los Angeles Transportation Club.

The Bingham formula involves creation of public transit corporations, separate from municipal governments, to acquire title to privately-owned systems and pay for them out of revenue over long periods of time. He enumerated seven benefits to the municipality:

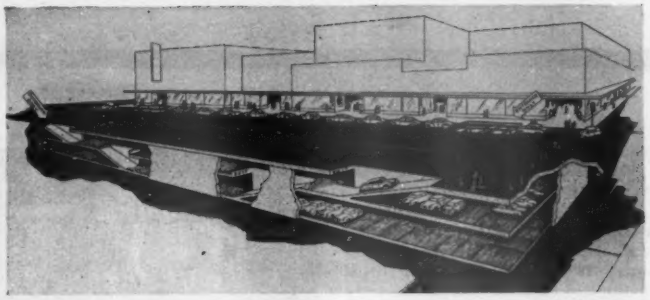
1. It ultimately would own the transit system which serves it.
2. It would acquire the system at no cost to the fare payer or tax payer.
3. Purchase out of revenue would involve no outlay of the city's general funds.
4. This method of acquisition would not affect the city's borrowing power for other capital improvements.
5. Transit owned by a public corporation would operate on a non-profit basis solely for the community's benefit.
6. It would be free from external pressures or restrictions.

Continued on next page

7. The city would have assurance of continuity of this essential service.

The autonomous public corporation under his formula would issue revenue bonds, to be redeemed over a 20-year period, to acquire privately-owned lines, said Col. Bingham. Management, he added, would be placed in competent private hands under the direction of a Board of Directors representing both the government and the bondholders and under municipal regulatory control.

"I think in this type of public transit corporation," Col. Bingham declared, "we get the best features of private and public ownership. We reduce the fare burden on the rider so that transit patronage is encouraged and traffic congestion is relieved."



Wide World Photo

SUB-STREET parking has been advanced by two Phoenix men as a possible cure for the snowballing traffic difficulties found in many American cities. Seeking patents on some features of their idea, they pointed to the fact that parking lots under the street would save valuable real estate, create ready-made bomb shelters, permit normal use of the street.

Iron and Steel Scrap Needed for Defense

Inventories of heavy iron and steel scrap at the nation's steel plants and foundries are dangerously low, says Robert W. Wolcott, chairman of the American Iron and Steel Institute Committee on Scrap Iron and Steel.

Supplies on hand are, he says, fluctuating between enough for days and enough for only a few weeks, as compared to normal, safe-working inventories about 60 days.

And the word from Washington is that Korean peace, should it be achieved, would not mean cutbacks in the amount of steel needed to keep production going.

The American Iron and Steel Institute, urging that all scrap steel be turned into the channels which will eventually bring it back to the foundries for re-use, pointed out that more than 1.5 billion tons of the metal are now in use in the U.S., and that normally millions of tons are discarded, then re-cast, every year.

But, says the Institute, during World War II more than 110 million tons were shipped overseas and blown up or otherwise lost forever. Further, steel production has in 1951 been rolling along at an unprecedented rate—more than 104 million tons—and the scrap cycle (steel from mill to product and back to mill again) has been temporarily disrupted. And it asks that the cycle be restored quickly, to maintain production and to rebuild depleted inventories.

Meissners to Continue In St. Louis Car Co.

The Meissners—Edwin B. Sr. and Jr.—will continue in the management of the St. Louis Car Co., though the stock in the company has been sold to Lafayette College, Easton, Pa., in a deal involving about $6 million (See Top Topics, July B.T.).

Mr. Meissner, Sr., said in a statement that "(We) continue management of the St. Louis Car Company, exercising in the future the sole and complete power and authority to determine all matters of policy relating to the management, operations, and affairs of the company, as we have heretofore." He has been president of the company since 1920, and had owned a controlling interest in it since 1925.

CTA to Finance Balance Of 849 New Vehicles

Chicago Transit Board has authorized the issuance of $2,311,000 in Series C equipment trust certificates to pay for the balance of the new propane buses and modern trolley buses recently purchased by Chicago Transit Authority.

The Series C certificates are to provide funds to pay for the final 50 propane buses, of the 500 bought from Twin Coach. The certificates will also enable paying off on the final 74 of the 349 trolley buses bought from Marmon-Herrington.

Series C trust certificates will total $2,311,000. Only $825,000 will be issued at once, the balance being issued as the final deliveries of the propane and trolley buses are made to CTA. Interest rate on the Series C certificates will average four per cent.

Including the certificates just authorized, CTA had borrowed a total of $17,311,000 for recent equipment purchases. To this $17,311,000, the Authority added $5,500,000 of its available cash. CTA has already repaid $1,637,000 of the borrowed $17,-311,000.

Equipment purchased as a result of the financing includes 500 propane buses from Twin Coach, 51 propane buses from ACF-Brill, 349 trolley buses from Marmon-Herrington, and 200 L-subway cars from St. Louis Car Co.

As of July 2, CTA had received 461 propane buses from Twin Coach, 51 propane buses from ACF-Brill, 43 trolley busses from Marmon-Herrington, and 130 L-subway cars from St. Louis Car.

Financing the purchase of new equipment was only one of CTA's current problems. Reportedly, CTA's new wage pact, providing for wage increases of about $7,000,000, plus other mounting costs, will produce a $3,410,817 loss by the end of this year.

To offset this situation, CTA proposed a new fare plan providing for a cash fare of 20 cents, six tokens for $1 and a citywide system of weekly passes. It met a buyers' resistance at crowded public hearings, and the Authority settled on a plan which calls for a basic fare of 17 cents on surface lines and 18 cents for rides on express buses and in the central zone of the rapid transit system.

Fares formerly were 15 cents on surface lines and 17 on elevated and subway lines—among the highest in the country.

In the new plan—which is an "interim" plan, pending further study—a zone system was included. Seventeen cents will be charged in the north or west zones of the rapid transit system. Through tickets between any two zones will cost 25 cents and

More news on page 60—but turn the page to read Earl Theisinger's last-minute story on the silver anniversary of City Rapid Transit Lines—first all-bus system in Ohio.

LABOR DEVELOPMENTS IN THE BUS INDUSTRY

BY PHILIP B. WILLAUER • SIMPSON AND EGAN, PHILADELPHIA, PA.

Weak Joints

"All Federal unions are weak in the joints. The articulation between states and union and between states themselves constantly raises questions which tax the ingenuity and try the patience of statesmen and politicians alike." These words of James T. Young, one of the truly great students of our American political system, were never more apt than they are today in the field of labor relations. The persistent undermining by NLRB of the power of the several states to act in this field has at long last stirred state authorities into action. The assertion of jurisdiction by the New York Labor Relations Board over two taxi-cab companies operating in New York City has led to a court battle between the State and National Boards. The first round of the battle, which will probably end in the U. S. Supreme Court, has been won by the New York Board. The Federal District Court has refused to enjoin the State Board from exercising jurisdiction over one of the taxi-cab companies.

The court's statement as to what "affects commerce" might well have been pondered by the Fifth Circuit Court at New Orleans which on June 28 upheld the assertion by NLRB of jurisdiction over the El Paso-Ysleta Bus Line which "owns 13 buses, and operates eight or nine of them on scheduled runs."

How Far to Go

The Federal District Court in the New York Case said: "How far the phrase 'affect interstate commerce' may be carried has not been determined by the authorities. It may be carried to the ridiculous extent of saying that practically every activity directly or indirectly affects interstate commerce. For example, a person about to embark on an interstate journey may go to a store to buy certain articles that he needs in the course of his travels. Surely it does not follow from these facts that the store is engaged in an activity that affects interstate commerce."

Not too far removed from the illustration given in this quotation is the determination by NLRB early this year in *Riverside Memorial Chapel*, 92 NLRB No. 238, that the interring of the corporeal remains of a person already embarked on his journey into the unknown "affects interstate commerce." The theory supporting such conclusion is, of course, that strikes by employes of undertaking establishments would obstruct the free flow of commerce in that such corporeal remains would not move, at least in certain cases, across state lines and neither would the materials and supplies normally purchased by undertaking establishments in the performance of their function.

The problem of constructing an acceptable and workable line of demarcation "between states and union" in this field was sharply accentuated in February when the U. S. Supreme Court struck down the Wisconsin Public Utility Anti-Strike Law.

Taken at face value that decision seriously undermined a fundamental constitutional doctrine which had its inception as early as 1819 in the *Dartmouth College v. Woodward* decision of the same court.

The respective states are vested under this doctrine with certain "police powers," namely, the power to protect and foster public health, safety and welfare at the state and local level. Can one imagine a more direct and forthright exercise of such "police power" than by state legislation which protects hospitals, water utilities, purveyors of perishable foods, and the like in a modern urban community from interruption of electric power by reason of a labor dispute between a power and light company and the union representing its employes?

The Laws Are There

The destruction of state power in the *Amalgamated v. WERB Case* was effected through a statute not as clearly based upon state police power as are the Indiana and Pennsylvania acts; and upon the effect of a transit tie-up in the City of Milwaukee. What is required to sharpen the issue before the courts and the public is the courageous application by state authorities of such public utility anti-strike legislation to protect a community against cutting off of electricity by reason of a strike by the employes of a power company.

The Pennsylvania law, for example, by its own terms is applicable only to utility disputes "which cause or threaten . . . an interruption in the supply of service *necessary to the health, safety and well being of the citizens of . . . Pennsylvania.*" Before the law may be invoked, the Governor must make a formal finding that the service interruption, actual or threatened, is one *"on which (the) community is so dependent that severe hardship would be inflicted on a substantial number of persons by a cessation of such service."* Were such law invoked to protect the health and safety of the residents of a substantial city against the shutting off of electric current, could the U. S. Supreme Court nullify such protective state action? Perhaps the example of the N. Y. Labor Relations Board may lead some other state authorities to confront the U. S. Supreme Court with an issue it was not faced with in the *Amalgamated v. WERB Case.*

PLANNING THE CELEBRATION, Mr. and Mrs. Harry Arnold (left) chat with Flo Sheridan and the Harry Weingartner's.

SILVER ANIVERSARY DINNER, with City Rapid Transit as the genial host, was given for 102 guests at the Granville Inn.

EDWIN J. HAYNES, mayor of Newark, warmly congratulates the City Rapid Transit Lines on its 25th year of service to the city.

HARRY ARNOLD, president of City Rapid Transit Lines, voices his appreciation for the public's patronage over many years.

Ohio Transit Company Celebrates 25 Years Of Operation In Newark

• JUST 25 YEARS AGO on July 21 the City Rapid Transit Lines made its initial bow to Newark, Ohio, making it the first all-bus city in the state. To celebrate its silver anniversary, Harry W. Arnold, president of the company, was host at a dinner at the Granville Inn at which 102 guests were present including Mayor Edwin J. Haynes and members of the Newark city council, representatives of the cities of Zanesville and Mansfield, in which Mr. Arnold also operates bus lines, and members of the State Public Utilities Commission and Highway Patrol.

Brief addresses were made by Mr. Arnold, Mayor Haynes and W. H. Sawyer, well-known transit authority and consultant. In paying tribute to the service being rendered by Mr. Arnold's operations, Mr. Sawyer stated that transit companies cannot afford to continue to give 18 hours of service seven days a week unless there is sufficient patronage to support it. Service late at night and on Sundays should be reduced when the volume of riding is insufficient to cover the expense of service. In the evening Mrs. Arnold was hostess to a group of women, wives of the board of directors and out of town guests.

FIVE BRAND NEW GM BUSES, 31-passenger models, were impressively put into service as a notable part of the anniversary.

GALA OCCASION attracted enthusiastic gathering, including officials from three cities served by the Arnold operations.

HEAD TABLE had officials of Newark, Mansfield and Zanesville; members of Public Utilities Commission and Highway Patrol.

BILL SAWYER of Columbus, well-known to transit men as a veteran authority in field, pays tribute to transit as civic necessity.

TOKEN OF APPRECIATION, a desk set, is given Mr. Arnold by Ross Davidson, one of Lines' directors, on behalf of Board.

SNIPPING THE RIBBON at ceremony in Newark's public square, Mayor Haynes officially launches operation of the five new buses.

FIRST RIDERS: Mrs. Weingartner, Flo Sheridan, Mrs. Van Auken, H. Arnold, H. Weingartner, W. Kearney, C. Van Auken, Mrs. Arnold.

As an important part of the celebration, five new GM 31-passenger buses were placed in service at an official ceremony in which officials of the city and transit company participated. This ceremony took place at noon the following morning. Mayor Haynes launched the operation when he snipped a white ribbon which was fastened to the door of the lead bus. In citing early history of the company, Mr. Arnold mentioned that Newark was the first all-bus city in Ohio when operation started back in 1926 with 12 buses which replaced a former street car operation. Today 19 modern buses serve Newark and the company employs more than 40 people.

will include a free transfer to the surface lines. Childrens' and students' fares are scheduled to be eight cents, except between zones; then, 16.

Cleveland Transit Fares Up 6-20%

While Chicago was deep in fare increase discussions, another big system — Cleveland Transit System — went right ahead and hiked fares by six to 20 per cent.

The increases took effect on the first of July, same time a higher wage scale for CTS workers went into effect. Increases were voted by the Transit Board on the recommendation of General Manager Donald C. Hyde, who gave wage increases of $1.5 million plus a $400,000 budget deficit as his reasons for asking for the boosts.

Local fares went up from 13 to 15 cents, express fares to 20 cents from 18, passes and student fares are higher, too.

CTS plans to use part of its hoped-for $2 million annual additional revenue to finance new equipment—50 new buses, 100 trolley buses.

NAACP Set For Attack On South's Ordinances

Operators in Southern states can look for attacks on segregation laws from the National Association for the Advancement of Colored People.

Meeting recently in Atlanta, NAACP legal minds forecast court battles over Jim Crow laws on interstate transportation facilities.

Previously the association has fought—with some success—segregation on interstate buses, is now getting into a new field.

Chief counsel for the group said the new trend in NAACP legal action will be given priority almost equal to that accorded segregation in education. He said that the new cases, still in the planning stages, will be fought out under provisions of the Fourteenth Amendment to the Constitution. They will attack both state constitutions and local ordinances, he added.

Speedrail Line Quits Operation

The Milwaukee - Waukesha - Hales Corner Rapid Transit Line—all that remained of what was once an electric interurban empire which boasted some of the best and fastest trains in the country—quit operating in Wisconsin recently.

The suspension came by order of Federal Judge Robert E. Tehan, and was inspired by the report of Bruno V. Bitker, who had been appointed trustee for the line when Jay E. Maeder relinquished control last year (See Oct., 1950, B.T., page 72).

Public Service Commission authorized the discontinuance of freight and passenger service, but specifically forbade actual abandonment pending a further order. It was supposed that the PSC's reason was that it wanted to okay the distribution of assets.

Trustee Bitker told the court reluctantly that the line could not be run at a profit. He said the line carried about 1.7 million passengers a year, and estimated the present value of the property at $550,000. Total claims against the line, sometimes called Speedrail, come to $2.3 million—$1.2 million of which resulted from accident and death claims growing out of a serious accident last fall.

He said that to put the line back on its feet would cost $250,000.

AFTER LENGTHY PUBLIC HEARINGS which drew crowds but not the expected angry throngs, Chicago Transit Authority voted unanimously to raise fares. High labor costs (see story beginning on page 56) had caused the board to put out feelers for a 20-cent fare, but it settled on a basic 17 and 18 cents, with an elaborate series of transfer and express bus charges added. Formerly, bus fares were 15 cents and elevated-subway fares 17. Now Chicago Motor Coach Co. is expected to ask for a raise from its basic 13-cents.

ICC 550 Near End; Bus Fares Okayed

The examiner's proposed report and order in the Interstate Commerce Commission investigation of bus fares under Docket MC C 550, covering the special and charter operations phase, has been released.

In his report the examiner proposes that the commission find that the present fares and charges of Class I Carriers for both special and charter services are not unjust, unreasonable or otherwise unlawful, and that the investigation of such fares and charges be discontinued.

Despite the fact that the proposed report might be considered as taking too technical and narrow a view as to the scope of the proceeding, it was recommended by the executive committee of NBTA that no exceptions be filed to the proposed report and order.

If the recommended report is allowed to become final by the ICC, it will complete the association's participation in the investigation of bus fares under Docket MC C 550.

Eight States Change Gas Tax; 6 Up, 2 Down

Recent action by state legislatures has raised gasoline taxes in six states, lowered them in two others.

Here are the changes:

Michigan increased gas tax from 3 to 4½ cents a gallon; South Dakota, Utah, New Hampshire, North Dakota and Wyoming all have hiked their state gasoline taxes from 4 to 5 cents a gallon.

But in two states—Georgia and New Mexico—the levy is down from 7 cents to 6 cents a gallon.

Flood Waters Hit Kansas City PS

As they did everything else, flood waters disrupted bus services in the Kansas-Missouri area last month. When the surging waters of the Mis-

souri River bubbled through the streets of Kansas City, the K. C. Public Service Co. was forced to suspend operations entirely on four routes and to cut drastically on eight others.

In some parts of the Midwest metropolis power system failures forced the company to substitute buses for streetcars. Even so, 30 routes were not affected at all.

Said President Powell C. Groner in a bulletin to all employees of the Public Service Co.: "Now, as never before, we must work together to meet this great disaster which has afflicted all of us."

In one 300-square block area—during the worst part of the flood—Kansas City Public Service put three special shuttle bus routes into service, carried passengers from perimeter to center and back. It used vehicles made idle on the dozen routes affected by the flood.

Employees of the company, some of whom were, of course, themselves made idle by lack of work during the flood, were urged to take their vacations. Some P.S. workers were given interest-free loans to tide them over while they couldn't work at their regular jobs, and the company arranged to give typhoid injections to employee-residents of flooded areas. It also took care of bringing in pure water from sources far from polluted sections.

Elsewhere in the flood, buses were used to evacuate passengers from the Santa Fe railroad's crack train, "El Capitan."

The Defense Transport Administration has already begun to make surveys to determine the extent of the damage done by the flood to surface transportation, ports and storage facilities.

Transit Firms Trying Studies and Surveys

A preoccupation with the idea of making studies and conducting surveys seems to be moving across the continent.

Five are either underway or under consideration. They'll be in Oklahoma City, Tulsa, Baltimore, Vancouver and Peoria, Ill. One has been completed in New York.

City Bus Co., of Oklahoma City, has employed Simpson & Curtin, Philadelphia transit engineers, to investigate the feasibility of zone fares in the Oklahoma capital.

De Leuw, Cather & Co., of Chicago, is to make a survey of Tulsa City Lines, look for ways to improve service.

In Baltimore a five-man commission headed by Gerald S. Wise, a mail order company official, has been named to study Baltimore Transit's operations and finances.

Vancouver, B. C., City Council, faced with protests from the street railway union and the public over reductions in bus service, has approved in principle an independent outside survey of the quality and frequency of the transportation service offered by B. C. Electric Railway.

During recent months BCER has cut back service because of a drop in passenger traffic. Ivor Neil, general

Continued on next page

WASHINGTON REPORT

Fringe benefits for transit and intercity employees, even though they might go through the 10 per cent allowable raise, were okayed by Economic Stabilizer Eric Johnston and the Wage Stabilization Board, if they meet certain conditions.

The new regulation, opposed by three members of the board, would permit paid vacations and holidays, differentials in pay for workers on different shifts, premium pay and call-in pay. All this regardless of previous pay increases. Actually, the regulation would permit a bus company to give such fringe benefits, but not to exceed the average for the industry.

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Oscar Chapman, Secretary of the Interior, told the Senate Interior Committee recently that gasoline rationing may become necessary within the next eight or 10 months if steel for the oil industry does not become available soon.

• • •

The National Enforcement Commission, the agency which will enforce the edicts of the Wage Stabilization Board, has been established. By next June the commission, which is made up of three members of the board, will make a spot check of some 10 per cent of all major U. S. employers.

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Samuel L. Newman has been appointed director of DTA's Manpower Division. He had been acting director since May 1, when P. L. Siemiller resigned the post. Mr. Newman has had long experience as a trade union official.

• • •

DPA has allotted—for third quarter construction of motor vehicles other than automobiles—122 million pounds of copper, almost two million tons of steel, and more than 64 million pounds of aluminum. And third quarter production of cars, which do not entirely come under Controlled Materials Plan, is limited to the materials required to produce about 1.2 million units.

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For operators with questions about CMP, the NPA has issued a pamphlet titled *80 Questions and Answers on the Controlled Materials Plan.* For copies, write Distribution Section, Division of Printing Services, Department of Commerce, Washington, D. C.

• • •

Streetcar and railroad companies won't enjoy the privilege of deciding for themselves how much critical materials they need for maintenance, repair and operating parts. NPA has said that operating supplies for streetcar and railroad firms are required so irregularly that they can't be allowed to decide how much they should have in any given quarter.

• • •

Expect to see spare tires on new cars about Sept. 1. NPA says it may permit manufacturers to include the fifth tire about that date, after several months of selling cars without them.

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A government material order has amended a regulation in order to extend to all small users of steel, copper and aluminum the benefits of CMP allotments of the three controlled materials.

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Melvin L. Anshen, of Bloomington, Ind., has been appointed deputy acting administrator of the DPA in charge of the agency's Office of Program and Requirements. As such he will also serve as chairman of DPA's requirements committee, the interagency group which reviews requirements and proposals and advises as to the determinations by which these requests are integrated into the overall mobilization program.

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DPA says that preliminary, unscreened requirements for the fourth quarter of this year indicate that there will be a serious shortage of structural steel during the last four months of 1951.

manager, reports that since the beginning of the year, the company's bus and street car system has carried about 60,000 fewer passengers per month than in the comparable months of 1950. The union has protested cutbacks, too.

Meanwhile, in New York City, the Regional Plan Association suggested that some agency, possibly the Port of New York Authority, re-examine what it called the policy of allowing commuter rail lines to remain static while millions of dollars are spent on main highways to stimulate motor traffic.

In reporting the findings of a two-year study by the independent association, its president concluded that railroads as well as highways should be developed, both to meet public need and to relieve traffic congestion.

NBTA Announces New Military Agreement

The National Bus Military Bureau, a division of the National Bus Traffic Association, has announced that Joint Bus Military Agreement No. 5 has been executed, and that it is to be effective from June 1, 1951, to June 30, 1952.

The new agreement provides that the allowance of five per cent on all military traffic is tendered by the carriers "with the understanding that the mode of passenger transportation that provides satisfactory service, that will meet the military requirements, and that is in consonance with the national transportation policy will be used by the military agencies."

Supplementing the new agreements, amendments to Military Transportation Regulations have been called to the attention of all military transportation officers. One of them:

"The officer arranging for passenger transportation by commercial transport and in arriving at a decision with respect to the mode of commercial transport to be used will observe the provisions detailed . . . taking into consideration the reservations of the military agencies stated, as well as service, economy and sound traffic judgment."

Pa., N. J. Anti-Strike Laws Compared in Book

Princeton University has issued a report comparing the public utility anti-strike laws of two states—New Jersey and Pennsylvania—in which it labeled the New Jersey statute the more successful.

The report was prepared by the university's industrial relations section.

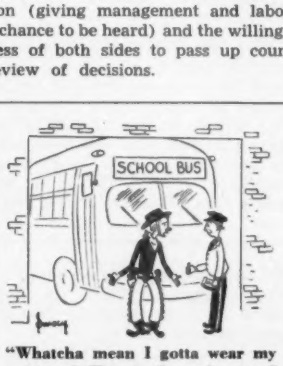
Busman's Holiday

Harry W. Arnold left off being president of Ohio Rapid Transit, Inc., long enough last month to join his fine fezered friends the Shriners in the revels in New York. While he was here Harry, who's Second Ceremonial Master of Aladdin Temple in Columbus, took the Aladdin Temple Picadors, a string ensemble, around to American Transit Association headquarters to serenade Executive Director Guy Hecker and the staff.

Under the New Jersey law, which provides for compulsory arbitration of labor disputes in public utilities where other settlement efforts have failed, wage awards have been as good or better than those obtained by utility workers in other states through collective bargaining, the report said.

And it added that the New Jersey act has been more successful than the Pennsylvania act in providing workable and acceptable solutions to labor troubles.

It was noted that, with one exception (in a telephone strike) all utility strikes in New Jersey have ended within 48 hours after state intervention in spite of unsettled conditions in a number of key utilities. In Pennsylvania, on the other hand, no strikes have occurred in utilities covered by that state's arbitration act. The study found that the better strike record in Pennsylvania is caused by too-stringent aspects of the law. Cited as key factors in the success of the New Jersey law are skilled and impartial administration, broad and flexible standards of judgment, the use of three-sided boards of arbitration (giving management and labor a chance to be heard) and the willingness of both sides to pass up court review of decisions.



"Whatcha mean I gotta wear my uniform? This is the only way I can handle those kids!"

Fare Briefs

Public Service Coordinated Transport, in New Jersey, is getting ready to ask for a higher fare—again.

Recently the company was granted relief from the nickel fare imposed on it by the New Jersey Supreme Court, got its fare bumped to seven cents. Now it's reported to want a temporary hike from the seven cent fare. The company has before the state Public Utilities Commission a request for a permanent eight cent fare, but some think it will ask for an even higher temporary rate.

• • •

The North Carolina Utilities Commission has turned down an application filed by White Transportation Co. in Raleigh for a 15 cent fare. The commission took it upon itself to say that it "believed that if the 15 cent fare were allowed, it would meet with public resistance to such an extent as to result in little if any financial assistance to the company and would impose upon the paying public an unjustifiable burden."

The commission did allow the firm to do away with tokens. White from now on will charge a straight 10-cent fare.

• • •

Increased fares on trips of less than 150 miles within the State of Oregon have been granted Pacific Greyhound Lines and Continental Pacific Trailways by the Oregon Public Service Commission.

Under the new order, basic fare for trips of 50 miles or less will be increased from 2 cents to 2½ cents a mile. For trips of 51 to 100 miles fares go from 1.9 cents to 2.3 cents a mile, and for trips of from 101 to 151 miles, the charge goes from 1.8 cents to 2 cents a mile.

In the application, the two companies emphasized increased operating costs and public demand for modern facilities and reasonable frequency of service. Commissioner George H. Flagg estimated that the boosts would increase revenue on the Greyhound line by more than $55,000 a year, based on present patronage.

• • •

Dallas Railway and Terminal Co. has asked for a fare increase from the present 12 cents to 15 cents, and the higher fare has been recommended by the city's utilities supervisor, J. W. Monk.

The company told the familiar story of higher labor and materials cost, decreased patronage, and the growth of the area it must serve.

SHORT HAULS

LIFE WILL BE BRIGHTER for some New Jersey paraplegic when he receives this motorized wheelchair built by members of the Public Service Post of the American Legion, composed of Public Service Coordinated Transport employees. They built the chair themselves, will present it to a paraplegic veteran of World War II—not yet chosen—on Sept. 15. Roswell Musier (in sports shirt) received congratulations from James M. Symington, vice president in charge of operations.

The past eight months have seen a 10 per cent upswing in bus travel in New York City, and much of the credit is given to the **Port of New York Authority Union Bus Terminal.** . . . The City Council of Marion, Ohio, recently accepted the offer made by Fred Dreisel, of Columbus, to set up a transit system, give Marion folks the first bus service they've had since 22 drivers of the **Marion Rapid Transit Co.** struck on June 1. . . . **Bus production** in Canada last year totalled 768 units—537 transit vehicles, 202 trolley cars and 29 chassis alone—and all, valued at $12.6 million, were sold in Canada, none were exported. . . . Berlin garage of **Public Service Interstate Transportation Co.,** in New Jersey, has won the American Transit Association Employees Safety Achievement Bronze Certificate—to get it, employees worked 286,688 hours without a lost-time accident. . . .

* * *

Sidelights on the **Detroit transit strike** keep popping up, and probably will continue to do so for months, maybe years. Here's the latest: when buses were running again, after the 59-day strike, a reporter out on a feature story assignment saw a girl pass up bus after bus. Why? "I've **found a regular ride** since the strike started and I think I've **found a husband.**" . . . And here's another one: A 33 per cent increase in private automobile traffic in the Motor City during the strike saw a 44 per cent increase in traffic accidents, but there was one less fatality recorded. . . . Frenchmen getting taller? Maybe. Anyway, **transport officials** in **Paris** recently had to place car cards higher in Parisian buses because they got so many complaints from people who bumped their heads. . . . In Shreveport not long ago they got out the brass band and had a parade for **Continental Trailways** Driver Shelly Liles, and rightly so. Liles has driven buses **1.5 million miles** in the last 20 years, without so much as a scratched fender. . . .

* * *

Bus drivers, apparently, will strike over almost any issue that enters their heads. In Williamston, W. Va., for instance, 28 drivers for the **Scott-Nichols Bus Co.** walked off the job in a dispute over their right to wear sports shirts while driving on buses. . . . A curious mixture of honesty and lack of curiosity cropped up in Milwaukee last month. A trolley bus rider found, wedged between two seats, a sheaf of **ten $100 bills** which had been there for four days without attracting any attention from the scores of riders who must have seen them. She found the owner, returned the $1000 and got a $125 reward. . . . And in Houston, meanwhile, a bandit who had successfully held up seven buses tried it again, and was shot and seriously wounded by a gun-toting passenger. . . . Trolley cars in two widely-separated U. S. cities gave a last gasp and died in recent weeks. In Fort Collins, Colo., the last street car system in the state gave up the ghost when the City of **Fort Collins Municipal Railway** abandoned trolleys in favor of buses. And in St. Louis, members of the 39th Street Business Men's Association had a little gathering to bid farewell to street cars on **St. Louis Public Service Co.'s** Park and Southampton routes. Buses took over there, too. . . .

* * *

Also in St. Louis, the Public Service Co. reports that it suspects the existence of a "claims racket" that's doing "big business"—reason is that claims against the company are running **half a million bucks a year more** than in eight other cities with comparable operations. . . . The State of Kansas, its largest city, Wichita, and Belmont, Mass., were the safest places for pedestrians in 1950, the **American Automobile Association** says. . . . Two hundred of the 600 school buses ordered by the State of North Carolina only last March have already been delivered. They'll be paid for out of funds which come into the state's coffers during the fiscal year which began the first of last month. . . . Continued losses of short haul passengers have meant that, during the first quarter of 1951 the average rider traveled five per cent further on **intercity buses** than in 1950.

* * *

Released from the shackles of school days, young Americans seem to have opened the **Silly Season** in a big way. John Vaughn, 8, found his home town **Chicago** too hot one night last month, so he walked onto an outward-bound bus and traveled to South Bend—he paid no fare because no one asked him for his ticket—and then he turned himself in to police. Similarly, David Pippin, 3, of **Nashville, Tenn.,** rode a city bus for two and a half hours, then found a policeman, declared himself a lost person. . . . Ottawa will get trolley buses by fall, the **Ottawa Transportation Commission** says.

Continued on next page

PERSONALS

JAMES DOUGLAS, 65, traffic supervisor for the Fort William Transit system, Fort William, Ont., retired recenty after 30 years of service.

FRED L. HALLER has been named treasurer of the Cincinnati Street Railway Co. He moves up from the position of cashier.

Mr. Haller succeeds **Philip D. Newell,** who resigned.

J. P. MARTIN has been appointed superintendent of equipment for Shreveport (La.) Railways Co. He replaces **Allen Mathews,** who died recently.

WILLIAM A. MILLER has been named superintendent of employment of Portland Traction Co., succeeding **Harvey G. Thompson.**

Mr. Thompson has been appointed chief instructor for the firm.

Mr. Miller started with the company in 1911 as a conductor, and since then has served as motorman, one-man operator, inspector and division superintendent.

K. D. OSTERBERG has replaced **C. J. Reynar** as superintendent of Decatur (Ill.) City Lines, Inc., a National City Lines subsidiary.

Mr. Reynar, who was superintendent at Decatur for eight months, recently went to Terre Haute to supervise a National City Lines bus company there.

Mr. Osterberg, native of Ottumwa, Iowa, was assistant superintendent in Canton, Ohio. Before that he was assistant superintendent in Portsmouth, Ohio.

MUNI MAN OF THE MONTH—San Francisco Municipal Railway's designation for the most courteous operator of the month—turned out to be woman-driver Ethel Rutland last time. She got $50 check, was first of line's 16 women to be so honored. J. H. Turner, manager of utilities, is at right.

Stanley Miller

STANLEY MILLER, general manager of Suburban Lines, Indianapolis, Ind., was elected president of the Indiana Bus Association at a recent meeting.

HOWARD H. MORGAN, well-known pioneer in the bus industry, has gone to Formosa to serve as consultant engineer to the Chinese Nationalist Government. He is scheduled to stay six months.

While on the big island off the China mainland, Mr. Morgan will aid in the organization of a city and intercity bus line and in the establishment of a government trucking system.

Mr. Morgan has undertaken the assignment for the J. G. White Engineering Corp., of New York, which has the overall contract for the rehabilitation of the island's industries. The project is being financed through the United States Cooperative Administration.

Mr. Morgan has been in the transportation business since 1913. He has served as regional and general traffic manager of the Pickwick Stage system in Los Angeles; as vice president and general manager of the Pickwick Greyhound Lines and affiliated companies in Kansas City; and as president of Santa Fe Stages in Los Angeles. Most recently he has been associated in the management of Citizen Auto Stage Co., operating from Tucson, Ariz., to the Mexican border.

C. L. SMITH has become comptroller of Pacific Greyhound Lines and California Parlor Car Tours Co., and **H. T. Dotson** has moved up to the position of auditor for the two companies. Mr. Smith will continue to function as the chief accounting officer, and, in addition, will direct the activities of the treasury departments of the two companies.

E. A. STEVENS has been appointed general superintendent of motive power and **N. L. McCracken** has been named assistant general superintendent of Pacific Electric Railway Co.

Mr. Stevens joined Pacific Electric in 1906 as an apprentice mechanic and advanced to the position of superintendent of equipment in 1949.

Mr. McCracken, master mechanic of Southern Pacific's Los Angeles division for five years before accepting his new assignment, began his railway career in 1920 as a machinist.

A. S. TODD, general manager of the Hamilton Street Railway, was elected president of the Canadian Transit Association at its annual meeting in Quebec City. He succeeds J. R. Empringham, superintendent of Niagara, St. Catherines and Toronto Railway Co.

H. W. Tate, assistant general manager of the Toronto Transportation Commission, was elected vice president.

Leonard Tait, of London Street Railway Co., and **H. E. King,** remain as secretary-treasurer and general secretary of the association.

WALTER SANDT, account executive with the Fred Eldean Organization, a New York public relations firm, has been appointed public relations officer on the Queens Borough staff of the Auxiliary Police. He holds the rank of major.

W. D. ZAHRT has been appointed operating supervisor for Great Lakes Greyhound Lines in South Bend, Ind. He is in charge of drivers and equipment between South Bend and Chicago, Detroit and Michigan cities.

OBITUARIES

BERNARD A. BEHNE, purchasing agent for the Cincinnati Street Railway Co., died recently.

Mr. Behne joined the Cincinnati company as stockkeeper in its Avondale garage in 1948 and was promoted to the position of purchasing agent on Sept. 1, 1950.

VOLNEY W. BERRY, former operating head of the Virginia Transit Co. and an authority on transit, died recently. He was 72 years old.

Starting as an apprentice mechanic in Salem, Mass., Mr. Berry later was

Continued on page 134

NEWS FROM THE MANUFACTURERS

THOMAS E. AKERS has been elected president, and **Maurice N. Trainer** elected chairman of the board of Dominion Brake Shoe Co., Ltd. **Kenneth T. Fawcett** was appointed vice president of the American Brakeblok and Kellogg divisions of the company.

Mr. Akers, who was formerly vice president of Dominion Brake Shoe, was born in New York, and joined American Brake Shoe in 1902 as an office boy. He rose through various sales and supervisory jobs sucessively to vice president of Ramapo Ajax Division of American Brake Shoe, president of the Canadian Ramapo Division and vice president of Dominion Brake Shoe.

Mr. Trainer, who is president of American Brake Shoe Company, was formerly president of Dominion Brake Shoe.

Mr. Fawcett was born in Calgary, Alberta, Canada. He was graduated from Yale University in 1934, and joined American Brake Shoe as an apprentice in that year.

C. ALFRED CAMPBELL, vice-president of the Marmon-Herrington Co., was awarded the professional degree of Civil Engineer by Ohio State University at its commencement exercises. This is the third degree to be conferred upon Mr. Campbell by the University.

E. J. DINKEL has been elected secretary of Mack Trucks, Inc. Mr. Dinkel, who attended Rutgers and was graduated from St. Lawrence University with a bachelor of law degree, is a member of the bar in both New York State and New Jersey.

Prior to joining Mack in 1946 as industrial relations director at the company's New Brunswick (N. J.) plant, he practiced law and taught at Rutgers, where he is still a member of the faculty.

E. J. Dinkel

George S. Fabel

GEORGE S. FABEL, active in the asbestos and rubber industries since 1917, has been elected chairman of the Executive Committee of the Thermoid Company, Trenton.

Mr. Fabel, a Thermoid director, is also president of one of the company's subsidiaries, Southern Asbestos Co., Charlotte, N. C.

THE FRAM CORPORATION, Providence, R. I., has announced the opening of its new oil filter and replacement cartridge plant in Greenville, Ohio. The new plant is the first in the world to be designed and constructed for the express purpose of manufacturing oil filters and cartridges.

Expansion of Fram's manufacturing facilities became a necessity two years ago, when existing production could not handle the growing demand for filters and cartridges. In addition, the company desired a plant that would be located more closely to the automotive manufacturing areas.

GENERAL ELECTRIC CO. has announced the appointment of **William V. O'Brien**, commercial vice president, to the post of manager of the firm's apparatus marketing division.

Mr. O'Brien, formerly assistant manager of General Electric marketing policy, succeeds **Chester H. Lang**, vice president, who now heads the firm's public relations organization.

HARRY W. HOWARD, manager of the Pacific region of the GMC Truck and Coach division at Oakland, Calif., has retired after 29 years of service with the company.

Also retiring from GMC was **J. W. David**, zone manager at Los Angeles, with the firm for 21 years.

"Both Harry and Jack have done a tremendous job for GMC Truck and Coach of the Pacific Coast . . . needless to say, we're going to miss them," said John E. Johnson, general truck sales manager for the division.

R. L. POLK & CO., Detroit automotive statisticians, say that, when all the figures are in, new passenger automobile registration for May will shape up about the same as for April—some 467,000 new units.

It had been expected that April car sales would show a decline.

ROYAL A. HAUER, a pioneer in the bus and truck industry, died July 18 in Oakland, Calif., after a brief attack of pneumonia. He was 66 years old.

Mr. Hauer entered the infant truck industry in Chicago in 1911 as a salesman for the International Motor Truck Corp., which later became Mack International.

He came to New York in 1920. When Mack established a bus division in 1924 he was made vice president and general manager. In this capacity he became actively associated with the growing bus transportation industry.

In 1947 he retired from active business because of ill health and had since been in Walnut Creek, Calif. He is survived by his wife, the former Agnes Scott Longan; four children; and 10 grandchildren. His three sons and one daughter are Royal A. Hauer, Jr., Pasadena, Calif., John L. Hauer, Dallas, Texas, Mrs. Covey T. Oliver, Berkeley, Calif., and George W. Hauer, Orinda, Calif.

Continued on next page

Royal A. Hauer

MARK M. TWOHIG, traffic manager of the Willard Storage Battery Co. for 36 years, has retired.

Mr. Twohig has an extensive background in traffic work. He worked for the Pennsylvania and Newburgh & South Shore railroads, the Cleveland Salt Company, the Lake Shore & Michigan Southern Railroad, and the Wm. Bingham Co. He joined Willard in 1915 as traffic manager.

Succeeding Mr. Twohig as traffic manager is **R. M. Stadick,** formerly general traffic manager of the Werner G. Smith Co.

Assisting him will be **A. J. Weber.**

FRANK E. WATTS, JR. has been appointed assistant metallurgist for Hunt-Spiller Manufacturing Corp., Boston, producer of heavy-duty brake drums.

WHITE MOTOR CO., in a just-issued survey titled *Facts About Diesel Economy for Transit Service,* continues to emphasize operating economy in the transit industry through correct application of diesel power.

The survey points out that today's operating conditions in the transit industry require that the industry seek intensively for additional economies

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FINANCIAL

BALTIMORE TRANSIT CO. reported a net income of $73,-108 for May after provision for debenture interest.

This showing compared with a net loss of $95,087 for the corresponding month last year.

May was the third month in a row to produce a net profit for the company. Net income for April was $48,366 and for March it was $54,904.

However, because of deficits suffered in January and February, the company was still slightly in the red for the first five months.

The net deficit for the Jan 1-May 30 period was $1,977 as compared with a deficit of $718,186 for the corresponding period last year.

Revenue passengers continued to run considerably below the previous year during May. The total last month was 15,770,463 against 17,-781,826, a drop of approximately 11 per cent. For the five months there were 75,-560,190 passengers compared with 85,179,624 in the 1950 period.

BARTONVILLE BUS LINE, INC., has been sold to Illinois Highway Transportation Co.

The Peoria firm will pay $65,000 for the operating rights and equipment of the company.

Fred O. A. Mehl, secretary-treasurer of the Illinois Highway Co. which operates Blue and White buses to Pekin through Creve Coeur, said the company will continue to operate over the same routes, via Bartonville.

In addition, Mehl Brothers company, owned by the same interests as the Highway company, have purchased the Bartonville garage property for $14,500, making the total sale price by the Bartonville line $80,000.

CHICAGO TRANSIT AUTHORITY revenues of $9,-457,530 for the month of May, 1951, were adequate, for the first time during the year, to cover all operation and maintenance costs, bond service requirements, and the full monthly provision for depreciation. In addition, there remained $25,113 to apply towards the deficiency of $1,-073,597 in deposits to the depreciation reserve fund which has accumulated to April 30, 1951.

The $25,113 remaining available after providing for full depreciation in May 1951 represented a reduction of $571,586 from the $596,699 remaining available after depreciation provision in May 1950. This reduction resulted from a decrease of $570,057 in revenues and an increase of $83,333 in depreciation provision.

CLEVELAND TRANSIT SYSTEM got into the black for the first time this year when, during the month of May, it racked up a net profit of $35,-663. May's operations halted a string of deficits and cut the operating loss for the five-month period to $315,208. Loss for the same period of 1950 stood at $23,996.

On July 1 the system inaugurated a new fare structure, designed to bring in $2,000,000 a year, and new wage increases for operating personnel, which will increase the annual payroll by $1,500,-000. Single fares were raised from 13 to 15 cents.

CINCINNATI STREET RAILWAY CO. reports that revenue passengers in May numbered 8,083,866, a decrease of five per cent from the same month of 1950. Total revenue for the month amounted to $1,163,666, an increase of more than $3,000 from the corresponding month a year ago. But net profits were cut by higher operating costs and higher taxes.

COMMUNITY TRACTION CO., Toledo, Ohio, saw its fare regulator fund deficit climb by $16,259 as a result of May operations, making a total deficit since Feb. 1 of $92,050, but the city board of transit control adopted Rate "N" for use by the transit firm when and if needed. Rate "N" calls for a 12-cent cash fare or five tokens for 60 cents.

Under the company's franchise, it must publish three steps in the rate schedule beyond the one currently in effect. The "N" represents the greatest distance yet traveled in the alphabetical rate journey.

"K" rate, calling for 10-cent cash and token fares, is the one now in effect. This fare was inaugurated May 20 and reflected only a small change in the net result for May's operations. However, over a full month it is expected to produce about $6,-000 more than the previous "J" rate.

The next increase would be "L", under which the cash fare would be 11 cents and the token rate 6 for 65 cents. The "M" rate would be 12 cents cash or 5 tokens for 55 cents.

Should the deficit in the fare regulator fund at the end of a three-month period ending July 31 be greater than at the beginning of this period, another fare increase automatically would go into effect, according to provisions of the franchise.

GREAT LAKES GREYHOUND LINES, INC., has purchased the Indiana route formerly operated by the Charleston Bus Co., between Louisville, Ky., and Carr's Lane, Ind. By so doing Greyhound acquired a second route into Louisville.

And Great Lakes disposed of its route from St. Ignace to Sault Ste. Marie, Mich., by way of Cedarville, Pickford and Hessel, to the Red Arrow Bus Line.

JOPLIN (MO.) PUBLIC SERVICE CO. reported to the city council it suffered operating losses totaling $14,277 during the first four months of 1951. The company sought new service curtailments.

NEW YORK CITY OMNIBUS CORP. has received Public Service Commission authorization to issue $1,250,000 in notes as partial payment for 75 new diesel omnibuses.

Total cost of the buses were placed at $1,469,567. Company officials said 43 of the buses already have been delivered and the others are expected to be in operation soon unless delayed by federal government action.

PACIFIC ELECTRIC RAILWAY CO. reported a reduction in net loss for the first five months of 1951, compared to the same period last year.

A deficit of $13,318 for May brought the net loss for this year to $98,838 against a deficit of $240,401 at the same period of 1950.

Operating revenues for the five months' period were up from $11,951,016 last year to $13,003,307, but operating expenses also increased from $10,947,786 to $11,881,400.

SASKATCHEWAN TRANSPORTATION CO., the all-bus system operated throughout the province of Saskatchewan, Canada, by the Saskatchewan government, had a net profit of $35,151, a sharp drop from the net profit of $120,582 in the preceding year, in 1950. The annual report stated the decrease is due to a decline in passenger

traffic, an increase in operation costs, and the fact there had been no corresponding fare increase.

SEATTLE, WASH., MUNICIPAL TRANSPORTATION COMMISSION paid off $410,000 of the Seattle Transit System's bonded indebtedness, leaving the system virtually debt-free.

Only one block of $500,000 in bonds remains to be retired, and the money already has been set aside for payment of the principal and interest due next January. The $500,000 represents the last of a $10,700,000 indebtedness assumed in taking over the former Municipal Street Railway in 1939.

The bonds paid bearing 1¾ per cent interest, were due Jan. 1953. The Transit System will save a net of $6,662 in interest by paying them in advance.

TORONTO TRANSPORTATION COMMISSION suffered a deficit of $1,312,058 in 1950, compared to a profit of $124,811 for the previous year.

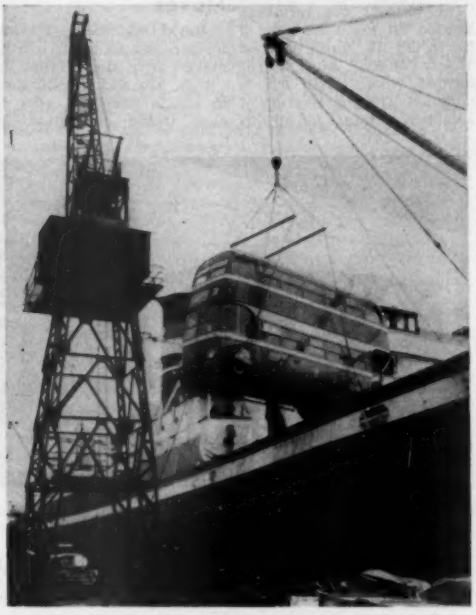
There were 3,339,637 fewer passengers carried in 1950 than in the previous year, a drop of 1.6 per cent, the commission pointed out. At the same time operating expenses were 5.22 per cent greater than in 1949.

Increasing cost was the result of higher wages, higher prices of materials and supplies and the jump in the cost of hydro, they reported.

The statement was signed by W. C. McBrien, chairman, and Commissioners Charles Walton and W. G. Russell.

WORLD NEWS

FIRST OF 20 NEW TROLLEY BUSES rolls from Mexico City's Transportes Electricos garage to service on the municipal line.



OVER THE SIDE, bound from England to Colombo, Ceylon, goes a Metropolitan-Cammell-Weymann Motor Bodies double-decker.

MEXICO CITY—Mexico City has trolley buses, the first in the country's history. The Mexican government recently purchased and put into service 20 of the vehicles, for Transportes Electricos, a former Canadian firm expropriated in the 1930s, and paid $14,000 each for them. Observers in the Mexican capital feel that the trolley buses were bought in order to stimulate private bus companies, perhaps force them to give better service to Mexico City residents.

TEL AVIV—A three-man delegation from the French automobile firm of Chausson left Israel recently after concluding final negotiations with the Israeli government for the sale of 300 buses and spare parts. It is expected that the final agreement between the two parties will be signed soon.

According to the terms, the French firm will supply 50 buses a month until Tel Aviv factories become capable of assembling the vehicles from parts sent from Paris. The plans call for import of 1,500 buses during a three-year period. A sample vehicle brought to Israel has been tested and found suitable for conditions in the arid Mediterranean country.

BUENOS AIRES—The head of the French Berliet truck and bus building concern, now touring South America, has announced the sale of 200 Berliet buses to Argentina, the first of which are now on the way to the South American country.

M. Paul Berliet, company president, said that a total of 400 buses are now on order for Argentina from several French concerns.

LEYLAND, ENGLAND—Total value of all Leyland Motors, Ltd., products exported during April and May came to nearly 1.75 million pounds ($4.8 million), and it is expected that figures for the summer months will maintain the same rate. Leyland products went to more than 20 countries in May of this year.

SAO PAULO—Sao Paulo's collective municipal bus fleet declined in number slightly during 1950 from 1949's 875 units to a new level of 857.

Two United States manufacturers, however, have more units in the fleet. They are Mack, with 95 buses, and Twin Coach, with 201. Seven other American makes declined in number, while the number of British Aclo units remained constant at 135.

Some 308,753,705 passengers rode Sao Paulo buses last year, compared to 261,425,697 during 1949, but even so the company lost money—$3 million last year, compared to $1.3 million in 1949.

MELBOURNE—The Australian Transport Advisory Council has decided to support a proposal that Australian states standardize laws affecting buses. Regulations now differ from state to state, so that interstate operators and bus builders are obliged to observe a variety of codes.

Continued on next page

TERMINALS AND SHOPS

Proposed

Milwaukee—A resolution asking for a study to find a location for a union bus terminal in downtown Milwaukee was introduced in a recent meeting of the Common Council. The alderman who asked for the study said, "The present bus terminal, located on the west side of North 6th St., south of West Wisconsin Ave., must be relocated when North 6th is widened. The construction of a central terminal for all bus companies operating in the city would be in the best interests of both the city and the bus companies. A properly located union bus terminal can help alleviate some of the present downtown traffic congestion."

Moves

Royal Oak, Mich.—The suburban bus terminal will be moved from the present location, 4th and Washington, to a side street in order to ease traffic congestion. A gasoline station a block from the present site will be remodeled to serve as a waiting room. The new station, to be ready for use about Sept. 30, is expected to be served by Great Lakes Greyhound and Martin Lines.

Providence, R. I.—United Electric Railways Co. has moved its general offices from 24 Exchange Place to 265 Melrose St. in Providence. Greater efficiency and new economies are expected to result.

Permits

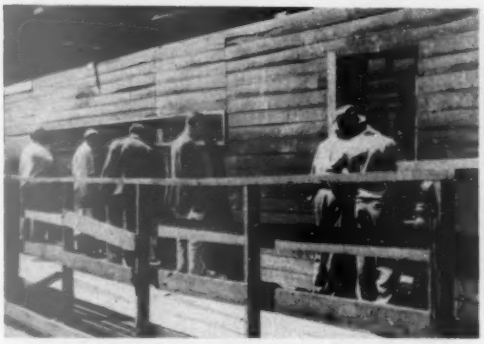
Jacksonville, Fla.—Southeastern Greyhound has filed for a permit to make alterations and additions to its offices and repair shops in Jacksonville. Estimated cost: $38,000.

Louisville, Ky.—Southeastern Greyhound has applied for a permit for construction of a $175,000 service garage on the northwest corner of 13th and Breckinridge.

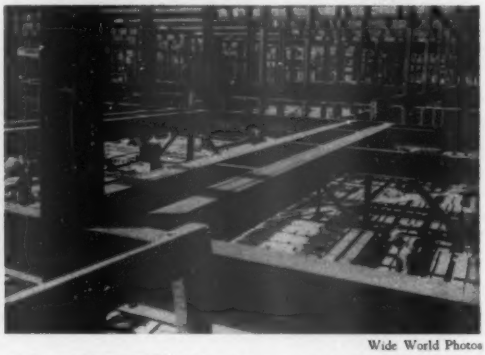
Buffalo, N. Y.—Niagara Frontier Transit System has filed plans with the City of Buffalo to enlarge its properties at 1603 Michigan Ave., at a cost of $150,000.

Damage

Dorsey, Pa.—Fire destroyed a garage, two new school buses and building material and tools. Losses were put at $50,000.



SIDEWALK SUPERINTENDENTS in Chicago are busying themselves these days at overseeing the construction of Greyhound's $7 million bus terminal. What they see is a...



Wide World Photos

FOREST OF STEEL BEAMS rearing up in Chicago's loop district. When finished, the terminal will consist of two levels above the street level, two below. Target time for opening: Spring.

LEGAL DECISIONS

INDIANA—Petition for a rehearing in the Evansville City Coach Lines fare case has been filed with the Indiana Supreme Court.

The Supreme Court on June 25, in a four-to-one decision, made permanent a temporary injunction against the lower court.

Judge J. D. Rawlings had issued a restraining order, without notice, against the company preventing the charging of fares of 15 cents cash, or two tokens for a quarter.

The company then went to the supreme court and obtained an injunction against the lower court, after which the increased fares were restored. The fare previously was 10 cents straight.

In the split decision handed down a few weeks ago, the higher court ruled Judge Rawlings had no authority to act in the case.

In the petition filed yesterday it was contended the majority opinion of the high court was erroneous because it "failed to consider the rule-making power of the Public Service Commission, and the rule promulgated by it in the order of suspension of tariff PSCI No. B-4."

KENTUCKY—A judicial order which kept the Cincinnati, Covington and Newport Street Railway Co. from raising its fares was upheld a few minutes before the scheduled fare increase was to go into effect.

The line had intended to do away with the 7½ cent token ride, stick to 10 cents straight. Earlier, it had gone ahead with plans to hike the fare, despite an order which forbade it to do so. Company officials faced contempt of court charges.

NEW JERSEY—A Workmen's Compensation Court has awarded $11,664 in permanent and temporary compensation, plus $790 for hospital bills, to a Public Service Coordinated Transport bus driver. The court said that higher blood pressure and a cerebral hemorrhage caused by emotional and nervous shock met in the bus driver's occupation are no less a personal injury than if they had resulted from the physical impact of an accident.

The driver had suffered paralysis of the left side resulting from a cerebral hemorrhage after his bus, crowded with passengers, missed colliding with a heavily-laden truck some two years ago.

NEW YORK—Trustees of the bankrupt Third Avenue Transit Corp. have filed suit in Federal Court, seeking to recover $873,546 from 13 former directors and four creditors.

The trustees want $281,700 from the erstwhile directors, who voted to pay 1¼ per cent on the principal of ad-

justment mortgage 50-year five per cent gold bonds while the system was in bankruptcy.

NORTH CAROLINA — Seven slander suits totaling $426,000 have been filed against the Carolina Coach Co. in Raleigh as a result of a labor dispute last January.

The complaints were brought by former drivers.

One plaintiff said he was "detained and imprisoned for approximately nine hours" and accused of stealing money from the company. The suits evolved from contract negotiations last January between the company and the Amalgamated Association of Street Electric Railway and Motor Coach Employes of America, an AF of L affiliate.

During the dispute, the company fired 29 drivers for allegedly failing to turn in fares to the company.

OKLAHOMA — Three major interstate bus systems operating into Tulsa have been accused by the Department of Justice of "conspiracy to suppress and restrain competition" in their operation of the Union Bus Terminal in Tulsa.

The action was taken under the provisions of the Sherman Anti-Trust Act. The three: Missouri-Kansas-Oklahoma Coach Lines, of Tulsa; Southwestern Greyhound Lines, Inc., of Dallas; and Transcontinental Bus System, Inc., also of Dallas.

The complaint charged that the three bus lines operate the terminal "as a means of suppressing competition and channeling passengers passing through Tulsa to their bus lines and to the exclusion of competitors."

The complaint also alleged that the three bus lines use their control of the terminal "to coerce other bus transportation concerns to cease and desist from competing with the defendants."

The complaint requests permanent injunctions which would prohibit the three companies from preventing the use of the Union Bus Terminal, or of any terminal facilities maintained by the defendants in Tulsa, by other motor carriers of passengers on reasonable and non-discriminatory conditions and terms.

ONTARIO — Montreal's bus and street car transportation system has been taken over by the Montreal Tramways Commission as a result of legislation as well as court approval. The Commission has acquired more than the necessary two-thirds of shares of the Montreal Tramways company's shares.

VIRGINIA—This state's Public Utilities Labor Relations Act, a law designed to ward off strikes in "public welfare" industries, has been challenged in Federal District Court.

A group of Hampton Roads ferry workers asked the court to issue an injunction to restrain Governor Battle from enforcing the law.

They said it "imposes unconstitutional restraints" upon the rights of employees to strike.

The petitioners, employes of the Virginia Ferry Corp. at Little Creek contended the act was unconstitutional.

District Judge Sterling Hutcheson, who received the petition, took no action on the injunction request. He referred the case to the United States Court of Appeals for the Fourth Circuit.

Sidney H. Kelsey, attorney for the employes, said the petition was entered on grounds that the United States Supreme Court has declared a similar act in Wisconsin unconstitutional.

Attorney General J. Lindsay Almond, Jr., said he would fight any attack on the act. He also commented that the Supreme Court ruling in the Wisconsin case did not apply to Virginia as he saw it.

WASHINGTON—Judgements totalling $96,000 were allowed R. D. McCormack, former Seattle radio executive, and Mrs. Johanna Greig, Cashmere widow, against the Northwest Greyhound Corp. as the value of stock they owned in the former Washington Motor Coach Co.

Their attorneys said a 1949 state law makes it possible for owners of stock to refuse to sell at a figure offered, and for either side to appoint an appraiser for the stock.

The attorneys said that when Greyhound took over the Washington Motor Coach Co. in 1946, it paid stockholders what it figured their stock was worth. It acquired all but about three percent of the coach company's outstanding stock.

McCormack and Mrs. Greig refused Greyhound's offer of $36 a share. They filed suit under provisions of the 1949 law. The appraiser, a Seattle businessman, reported the stock worth $80.66 a share. The appraisal was approved by Superior Court.

Both petitioners are also entitled to six per cent interest since Sept. 9, 1949, the judge ruled. The appraisal fee was also charged to Greyhound.

Under the court's decision the company must purchase and the holders must sell at the price set by the appraiser and approved by the court.

PARTIAL LIST OF CERTIFICATES ISSUED

COMPANY	ROUTE	MILEAGE
CALIFORNIA		
Sam Crothers	March Air Force Base to Riverside	
Lincoln Bus Line	Stockton via points north of town and Colonial Heights	
GEORGIA		
The Suburban Coach Co.	Columbia Dr. to Glenwood	
ILLINOIS		
Chicago Transit Authority	Grand Ave. to Clark St.	
INDIANA		
Indianapolis Railways Inc.	Ext. 38th to Arlington crosstown bus line	1.5
MINNESOTA		
Northland Greyhound Bus Line	Minneapolis via Siren, Webster, Wisc. to Duluth, Superior	
	Minneapolis to Iron Mountain	
	Montevideo to Watertown, S. D.	52.0
MISSOURI		
Mackenzie Bus Line	Chippewa via Mackenzie road to Jamieson Ave.	
NEW JERSEY		
Coast Cities Coaches Inc.	Ext. 10th Ave. via F. St. to North Blvd.	
Orange & Black Bus Lines Inc.	Ext. Fort Lee to Cliffside Park	1.5
Public Service Interstate Transportation Co.	Camden to Collingswood	4.0
NEW YORK		
David Dunn	Jamestown to Mayville	
NORTH CAROLINA		
Burke Transit Co	Ext. Morganton via Newland to Banner Elk	52.0
The Columbus Transit Co.	Laurinburg-Maxton Air Base	
The Rockingham Suburban Bus Line (A)	Rockingham to Ellerbee via Roberdell	11.0
Seashore Transportation Co.	Grantsboro to Oriental	20.0
	Marshallberg to Gloucester	
PENNSYLVANIA		
Bethel Transit Co.	Reading to Indiantown Gap	
Reading Transportation Company	Reading via Womelsdorf, Rehrsburg, Bethel, Fredericksburg, Lickdale to Indiantown Gap	
TEXAS		
The Community Bus Line	Wonder Homes to West Avenue	

IN THE STATE LEGISLATURES

FLORIDA—Governor Warren vetoed a bill passed by the Florida Legislature which would have assessed the costs of utilities regulation against all utilities and common carriers.

The governor said he was rejecting the bill because "it is manifestly unfair in that it attempts to place an additional tax on common carriers, both rail and motor, to pay for the regulation of utilities companies."

ILLINOIS—A bill increasing the Illinois gasoline tax rate to provide additional high-

Continued on next page

way construction revenue for the state and its political subdivisions was given final passage by the Illinois Legislature just prior to adjourning its 1951 session.

Under the new act, the gasoline tax rate will be increased by 1 cent per gallon, effective Aug. 1, 1951, and by another cent on Jan. 1, 1953, bringing the total tax to five cents per gallon.

When the new program goes fully into effect, it will provide between $100,000,000 and $128,000,000 a year for highways.

Under the five-cent levy, the state will get about $35,000,000 a year, cities $32,000,000, downstate counties $12,000,000, Cook County $11,000,000, and townships $10,000,000.

MISSOURI—The Missouri House of Representatives has defeated a bill which would have increased motorbus and truck state license fees from $4 million to $12 million annually. The defeat of the bill was the second major setback for Governor Smith's truck fee program. Another bill which he had favored was so badly chopped up by the House that it's considered unworkable.

NEW HAMPSHIRE—The State Senate has approved a civil defense bill which would require all transportation firms, both passenger and freight, doing business as of July 1 of this year, to remain in business in the event of war. As originally written, the measure would have applied to companies doing business as of June 25, 1950.

OHIO—A measure that would permit transit firms to appeal rate disputes to the Ohio Public Utilities Commission has been vetoed by Governor Lausche. The measure was vigorously opposed by Columbus, Dayton, Youngstown, and other cities served by private transportation companies.

Gov. Lausche, who called the bill "unsound, unjust, and contrary to public interests," said he was convinced that the legislation was "intended for the special benefit of certain public utility companies operating street transportation systems."

He asserted that it represented an abandonment of home rule because it would virtually nullify determination made by a city council and a transit company by permitting either to appeal directly to the Public Utilities Commission if dissatisfied.

* * *

Construction of a 241-mile toll superhighway across northern Ohio at a cost of nearly $300,000,000 would be feasible and could be put into operation by July 1, 1954, according to reports submitted to the Ohio Turnpike Commission by two engineering firms.

TEXAS—The Lock Anti-Sabotage Bill, passed by the 1951 session of the Texas legislature, and designed to curb strike violence, has been signed by Governor Shivers.

It provides stiff penalties for "wilful" damage to property or personal injury. If the damage is under $50, a fine up to $1,000 or imprisonment up to two years may be meted out. If the damage is $50 or more, a penalty of from two to 20 years may be given.

In the case of a personal injury, the penalties are doubled and in the event of death a charge of murder becomes mandatory.

BUS AND TROLLEY BUS DELIVERIES

Motor Bus Deliveries	Number of Buses	Manufacturer	Model and Type	Seats
Atlantic Greyhound Corp. (W. Va.)	15	GMC	PD 4103	41
Augusta Coach Co. (Ga.)	3	Marmon-Herrington	8M2BB	32
Auto Interurban Co. (Wash.)	2	GMC	PD 4103	41
Beatty's Ford Bus Co., Inc. (N. C.)	1	Marmon-Herrington	8M2BC	35
Boyd A. Beelman (Oreg.)	1	GMC	TGH-2708	27
Carl R. Bieber Tourways (Pa.)	1	Aerocoach	373MC	37
Blue Gray Lines (Wash.)	2	Flxible	218DWX7-51-338U	33
Brooks Bus Lines (Ky.)	1	GMC	PD 4103	41
Capital Stages Lines (Nebr.)	1	Flxible	218B1-51-291C	29
Carey Transp., Inc. (NYC)	5	Flxible	218B1-51-281C	28
Caterpillar Tractor Co. (Ill.)	1	GMC	TGH-2708	27
Central Greyhound of N. Y. (Ohio)	2	GMC	TDM-4509	45
Chicago Transit Auth. (Ill.)	8	ACF-Brill	C-44	44
City Bus Co. (Okla.)	13	GMC	TGH-3101	31
City Bus Lines (Ind.)	1	GMC	TGH-2708	27
Colonial Williamsburg, Inc. (W. Va.)	3	GMC	TGH-3101	31
Community Traction Co. (Ohio)	2	GMC	TDH-3612	36
Coshocton City Lines, Inc. (Ohio)	2	GMC	TGH-2708	27
Danville Bus Lines (Ind.)	1	GMC	TGH-3101	31
James & Greatano Domenico (N. J.)	1	GMC	PD 4103	41
E. & M. Transit Co. (Ohio)	1	Flxible	218B1-51-338U	33
Eagle Bus Lines (S. C.)	1	Beck	Mainliner	37
Edwards Mtr. Transit Co. (Pa.)	9	GMC	PD 4103	41
Elizabeth Transit Corp. (N. Y.)	2	GMC	TDH-3612	36
Ensenat & Co. (La.)	4	Flxible	218B1-51-291C	29
Michael Evanchyke (N. J.)	1	ACF-Brill	C-27	27
Flint Trolley Coach, Inc. (Mich.)	10	ACF-Brill	T-46	46
General Service Administration (D. C.)	1	GMC	TGH-2708	27
Great Lakes Greyhound Lines (Mich.)	5	GMC	PD 4103	41
Groome's Bus Service (Va.)	1	Flxible	218B1-51-291C	29
Gump Bus Lines (W. Va.)	1	GMC	TGH-2708	27
Harmony Short Line Mtr. Transp. Co. (Pa.)	5	GMC	TDH-3612	36
Holloway Bus Service (N. Y.)	2	Flxible	218B1-51-378U	37
Hudson Bus Lines (N. H.)	6	ACF-Brill	C-31	33
Hudson Bus Transp. Co. (N. J.)	3	GMC	TDM-4509	45
Inter-County Bus Lines, Inc. (Md.)	1	Marmon-Herrington	8M2BA	32
Jefferson Transportation Co. (Minn.)	4	GMC	PD 4103	41
Kannapolis Transit Co. (N. C.)	2	GMC	TGH-3101	31
Warren B. Levy (Pa.)	1	GMC	TGH-2708	27
Lewis Bus Lines (Tenn.)	1	GMC	TGH-3101	31
Lewiston-Auburn Transit Co. (Me.)	1	GMC	TDH-3612	36
Lexington Railway System (Ky.)	14	GMC	TGH-3101	31
Los Angeles Transit Lines (Calif.)	14	GMC	TDH-5103	51
Luserne & Carbon County Mtr. Tr. Co. (Pa.)	1	ACF-Brill	C-31	35
Manhattan Coach Lines, Inc. (N. J.)	5	GMC	PD 4103	41
Missouri Transit Co. (Mo.)	1	Beck	Mainliner	37
New England Greyhound Lines, Inc. (Mass.)	8	GMC	PD 4103	41
New York Omnibus Corp. (N. Y.)	1	GMC	TDH-4509	45
Northland Greyhound Lines (Minn.)	10	GMC	PD 4103	41
Nueces Transportation Co. (Tex.)	2	Marmon-Herrington	8M2BB	32
Pacific Elec. Ry. Co. (Calif.)	32	GMC	TDH-5103	51
Pacific Greyhound Lines (Calif.)	25	GMC	TDM-5103	51
Pacific Marmon-Herrington Mtr. Coach Sales (Calif.)	3	Marmon-Herrington	8M2BB	32
Pan American World Airways System (N. Y.)	1	Flxible	218B1-51-291C	29
Pennsylvania Greyhound Lines (Ohio)	13	GMC	PD 4103	41
Peterson's Garage & Auto Co. (Tex.)	2	Beck	Silverliner	37
Pinehill-Kingston Bus Corp. (N. Y.)	1	GMC	PD 4103	41
Port Arthur Motor Coach Co., Inc. (Tex.)	1	Marmon-Herrington	8M2BB	32
Potomac Edison Co. (Md.)	5	GMC	TGH-2708	27
Public Service of Colorado (Colo.)	2	GMC	TGH-2708	27
Queen City Coach Co. (N. C.)	2	Flxible	218B1-51-291CAC	29
Railway Equipment & Realty Co., Ltd. (Calif.)	11	GMC	TDH-5103	51
Reno Bus Lines (Nev.)	1	GMC	TGH-2708	27
Rochester Bus Lines, Inc. (Minn.)	1	GMC	TGH-2708	27
Rockland Coaches, Inc. (N. J.)	15	GMC	TDM-4509	45
Rollo Corp. (N. J.)	2	GMC	PD 4103	41
San Angelo (City of) (Tex.)	2	Marmon-Herrington	8M2BB	32
Sedalia Bus Co. (Mo.)	1	Marmon-Herrington	8MBA	27
Short Line, Inc. (R. I.)	2	Flxible	218B7-51-33-8U	33
Southeastern Greyhound Lines (Ky.)	3	GMC	PD 4103	41
Southeastern Stages, Inc. (Ga.)	2	GMC	PD 4103	41
Southwestern Greyhound Lines (Tex.)	1	GMC	PD 4103	41
Springfield City Lines (Ohio)	1	Marmon-Herrington	8M2BA	31
Springfield Transportation Co. (Ill.)	5	Marmon-Herrington	8M2BA	32
Statesville Mtr. Coach Co. (N. C.)	1	GMC	TGH-3101	31
Suburban Coach Co., Inc. (Ga.)	2	Marmon-Herrington	8M2BB	32
Transcontinental Bus System (Tex.)	15	GMC	PD 4103	41
United Traction Co. (N. Y.)	11	GMC	TDH-3612	36
Vermont Transit, Inc. (Vt.)	3	GMC	PD 4103	41
Washington, Va. & Md. Coach Co. Inc. (Va.)	5	ACF-Brill	C-44	44
Waukesha Transit Lines Inc. (Wisc.)	1	ACF-Brill	C-31	33
Western New York Mtr. Lines (N. Y.)	6	GMC	PD4103	41
White Eagle Lines (La.)	2	Flxible	218B1-51-291C	29
White Star Lines (Pa.)	6	GMC	PD 4103	41
Miscellaneous Deliveries				
Dept. of Army-Ord. C. (Mich.)	140	ACF-Brill	C-37M	37
Lovington Municipal School (N. M.)	1	Flxible	218B1-51-291C	29
Ord. Tank Auto. Ctr. (Mich.)	5	GMC	TDH-3612	36
U. S. Atomic Energy Commission (Ill.)	4	ACF-Brill	C-44	45
U. S. Government (D.C.)	26	Southern	S-36M	37
Foreign Deliveries				
Beck Motor Coaches (Ont. Canada)	1	Beck	Mainliner	37
El Alamia (Cairo Egypt)	4	Flxible	218B1-51-281C	28
GM. Overseas (N. Y.)	1	GMC	TDH-3612	36
Transportes Monterrey Cadereyta Reynosa S. C. (Monterrey N. L. Mexico)	10	Flxible	218B1-51-281C	28
White Mtr. Co. of Canada Ltd. Quebec Canada	29	Flxible	218B1-50-291C	29

NOTE: This list is based on monthly reports from manufacturers. Not all manufacturers report regularly, consequently, this list is not to be considered complete.

KEEP 'EM ROLLING... ALL DAY... ALL NIGHT

LONG-LIFE Exide BATTERIES WILL HELP

In Exide Batteries you get power and ruggedness ... plus long, dependable performance at extra low cost per mile of operation. With today's steadily increasing traffic, full-time service from every bus is a major need. And no item is more important than the battery. Only equipment of the highest quality, of *proved* dependability, should be considered on any replacement job.

Whether your buses are used in short-haul or long-haul service ... are gas or diesel powered ... *Exide is the best battery buy ... AT ANY PRICE.*

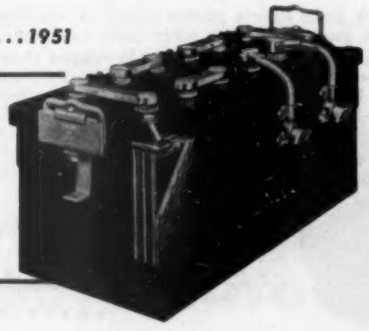
THE ELECTRIC STORAGE BATTERY COMPANY
Philadelphia 2
Exide Batteries of Canada, Limited, Toronto

"Exide" Reg. Trade-mark U.S. Pat. Off.

1888 ... DEPENDABLE BATTERIES FOR 63 YEARS ... 1951

Service-proved features that make Exide outstanding for bus service—gas or diesel

- Long-Life "LX" plates—proved in service.
- Heavy cell connectors.
- Reinforced hard rubber covers.
- Heavy-duty hard rubber container.
- Treated wood separators with Vitrex retainers.
- Quarter-turn vent plugs for convenient cell inspection.



YES, THERE'S A BIG DIFFERENCE IN JACKS

And This Big Difference Pays Off in Big Dollars!

Blackhawk Jacks have a proven record of standing up under punishment that other jacks can't take. **If a jack fails in an emergency or in rugged shop service — the delay is usually more costly than the jack itself.** So — when you buy jacks — *buy the best*—buy Blackhawk Jacks from your Blackhawk Jobber.

***A Product of* BLACKHAWK MFG. CO.**
Dept. J-1281, Milwaukee 1, Wis.

PROOF

Every leading frame and axle machine is Blackhawk equipped — because Blackhawk Jacks stand the gaff.

PROOF

Impartial tests by other manufacturers lead to choice of Blackhawk Jacks as *standard* equipment for leading trucks, busses, etc.

PROOF

For 19 years straight, the vast majority of Bus Transportation "Maintenance Efficiency" winners used Blackhawk Jacks.

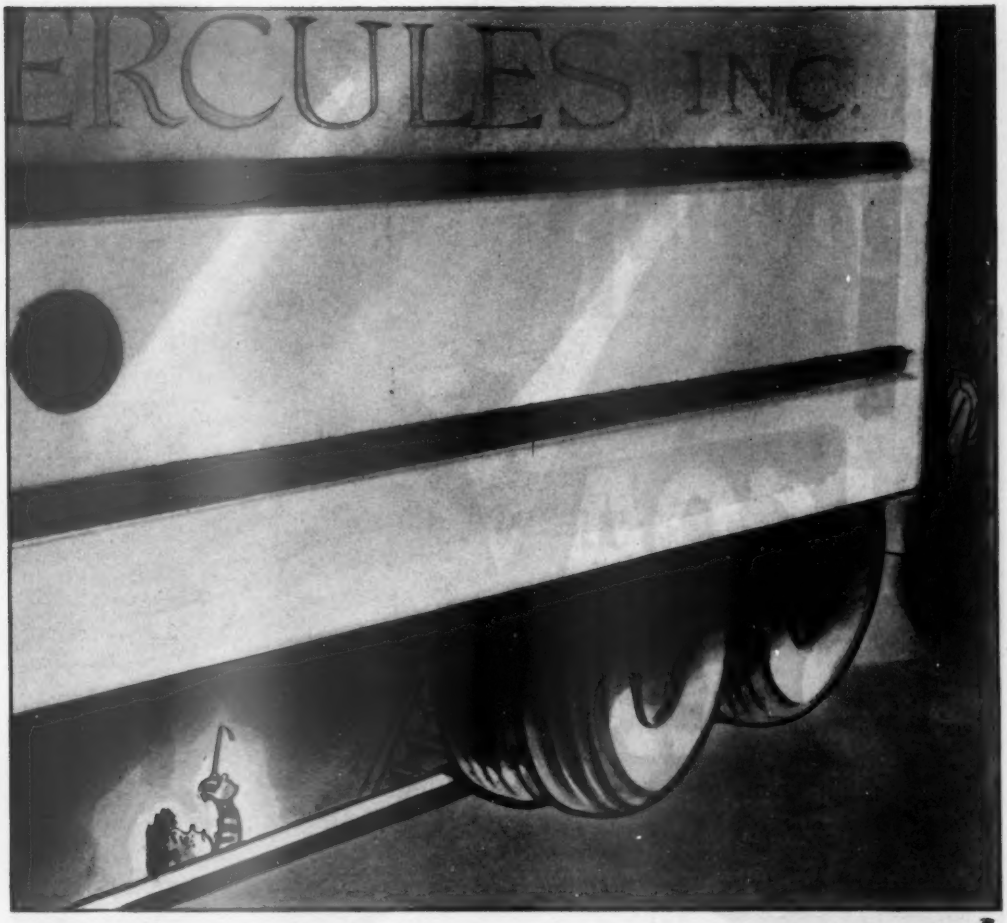
PROOF

Blackhawk is the leader in all fields requiring greater hydraulic jack stamina — industry, construction, shipbuilding.

Only Blackhawk Jacks are tagged with the "Service Proved" seal.

BLACKHAWK

"PORTO-POWER" • HYDRAULIC JACKS • WRENCHES



Don't send a boy to do a man's job!

YOUR NEEDS in heavy duty lubrication are mighty tough. That is why Phillips tackles your lube oil problem from the very beginning.

First, we pick top notch crude oils. We blend them to combine good characteristics. These, we preserve with "*continuous cold fractionation*."

Basically, this process separates oils at extremely *low* temperatures. No overheating, you see; no cracking complex lubricating molecules. No partial breakdown of the high quality you want in your oil.

Additives selected after an extensive series of full scale engine tests give extra protection against corrosion, foaming and acid action. You're also assured high detergency to wash away carbon and sludge.

Try it! Ask one of our on-the-job lubrication engineers to set up a side-by-side test of Phillips *66* Heavy Duty Motor Oil next to your present motor oil. Phillips Petroleum Company, Bartlesville, Oklahoma.

Oil for the Engines of Commerce

PHILLIPS 66 HEAVY DUTY MOTOR OIL

for cool, quiet

POWER

LOOK FOR

ALCOA LO-EX

when you buy replacement pistons*

CAST BY ALCOA
FOR PISTONS OF EVERY TYPE

Why pay the extra cost of inefficient power? Revive worn engines with aluminum pistons of ALCOA LO-EX!

Fleet men who know pistons rely on this trademark as their guide to quality. It identifies tough, heat-treated pistons that fit properly at all temperatures. No hot spots! No lost compression! No wasted fuel! You get more haul per overhaul when you insist on pistons of ALCOA LO-EX — cast by Alcoa, finished by expert piston makers. ALUMINUM COMPANY OF AMERICA, 1846H Gulf Building, Pittsburgh 19, Pennsylvania.

*Availability may be limited by military needs for aluminum.

MORE HAUL PER OVERHAUL!

Perfect for service

WAGNER LOCKHEED HYDRAULIC BRAKE PARTS...

. . . same as those used on new vehicles are available to you for replacement needs

When you replace worn brake parts with new genuine Wagner Lockheed parts you are assured perfect fit and maximum service life. This line is complete. It provides the correct replacement for the job, regardless of make or model of vehicle. It includes hydraulic wheel cylinders and master cylinders, ready to install; wheel cylinder and master cylinder repair kits, containing all necessary parts for a complete overhaul job; individual parts such as cups, boots, pistons, etc., brake hose; and other related parts.

...and all from ONE source..... your Wagner jobber....

WAGNER LOCKHEED HYDRAULIC BRAKE FLUID
—is an all season fluid that functions under all driving temperatures . . . Recommended for all cars and trucks . . . Mixes with other approved fluids. Surpasses S. A. E. standards.

WAGNER CoMoX BRAKE LINING
—offers complete coverage for all your needs . . . in sets, rolls, blocks, slabs and cut segments. A non-compressible, long-wearing lining of uniform texture.

Wagner Electric Corporation
6461 PLYMOUTH AVE., ST. LOUIS 14, MO., U. S. A.
(Branches in Principal Cities and in Canada)

Wagner ...the best known name in brake service

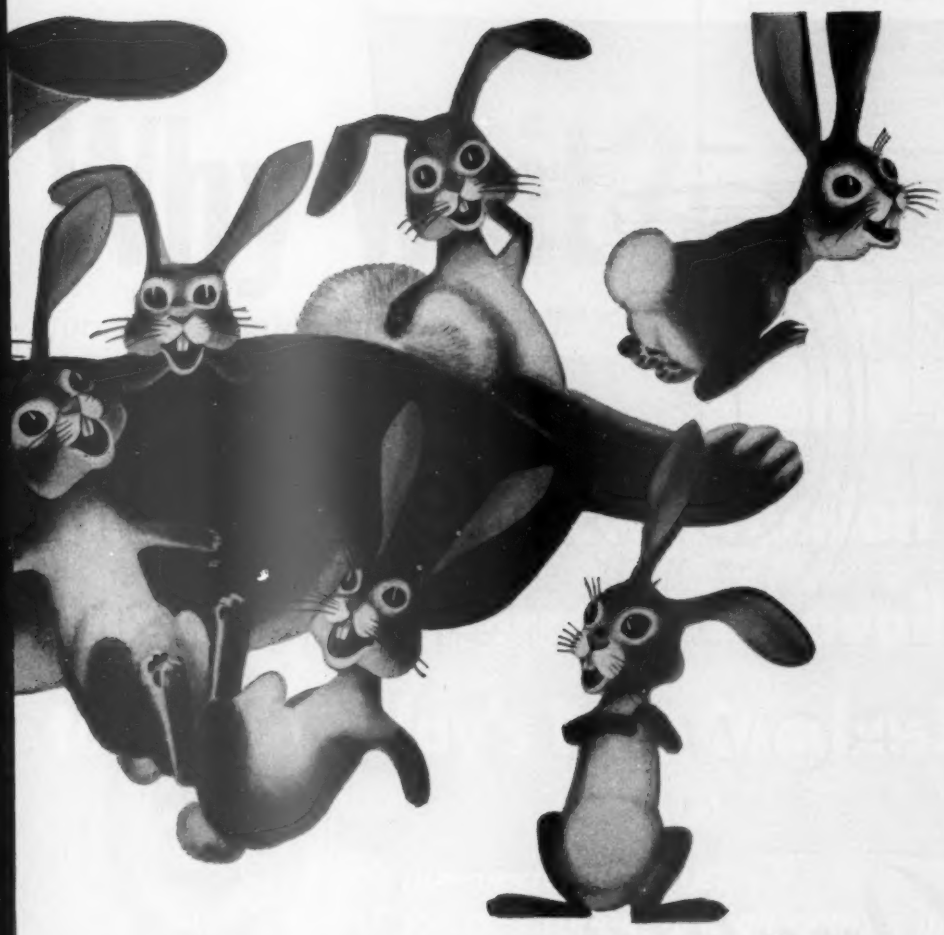
LITTLE THINGS HAVE A WAY OF ADDING UP!

Especially today—there's extra need to guard your expensive equipment against excessive downtime. Sometimes this is caused by seemingly *small* things, but these small things can result in stuck rings, scored cylinders, worn bearings —and really add up to costly trouble! For example...

In an Eastern bus fleet, major overhauls became necessary after 60,000 to 80,000 miles—well below previous mileage. A Socony-Vacuum engineer was called in. He traced the trouble to road dust by-passing the air cleaner and reaching the engine cylinders. His recommendations *doubled* the mileage between overhauls, and saved the cost of an expensive investigation.

In *your* operation, too, there may be conditions which—unknown to you—are affecting the Correct Lubrication of your vehicles, thus increasing maintenance costs and cutting your profits. *Why not find out?*

Socony-Vacuum, with 85 years of lubrication experience, will develop a program of Correct Lubrication custom-made for *your* equipment and operating conditions. Why not get this program started *today?*



Here's Practical Help for Fleet Operators . . .

Socony-Vacuum gives you . . .

- Help on maintenance problems.
- Individual, tested lubrication schedules.
- Advice on correct application of lubricants, proper handling and storing.
- One source of supply—available everywhere.
- Simplified inventory—with . . .

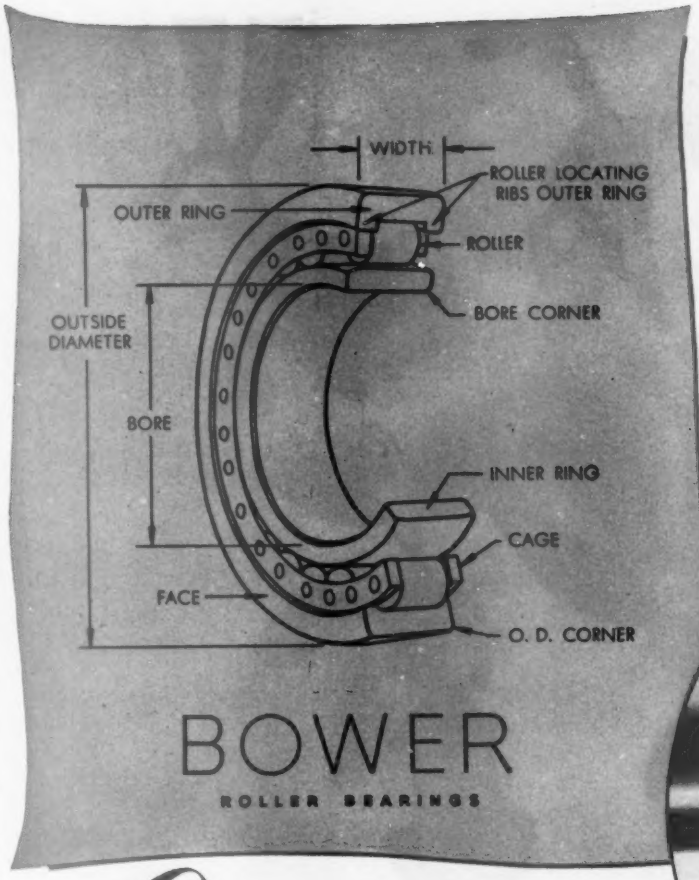
1. **DELVAC OILS**—for all gasoline and automotive-Diesel engines.
2. **MOBILUBE GX**—multi-purpose gear lubricant for all enclosed gears—manually operated transmissions, transfer cases and drive axles.
3. **MOBILGREASE**—in grades and types for proper lubrication of all chassis parts and engine accessories.

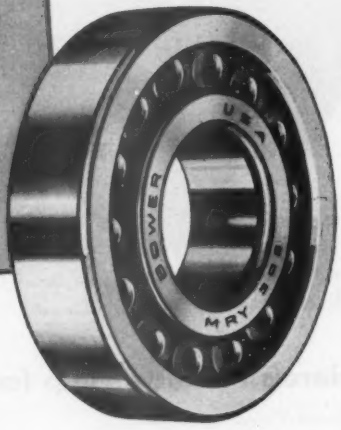
SOCONY-VACUUM

CORRECT LUBRICATION

for Fleet Operators

**THE FLYING RED HORSE COMPANIES: SOCONY-VACUUM OIL COMPANY, INC.
MAGNOLIA PETROLEUM COMPANY, GENERAL PETROLEUM CORPORATION**





Quality.... Service

With straight roller bearings for popular numbers and the extensive tapered roller bearing line, Bower offers you the most comprehensive coverage for service needs! Bower "Spher-O-Honed" tapered roller bearings represent the peak in high-precision quality production.

For quick, complete service on Bower call your Federal-Mogul Jobber! You get the parts you want when you want them. Bower and Federal-Mogul—an unbeatable combination for complete bearing service to you!

BEARING FEDERAL Mogul SERVICE

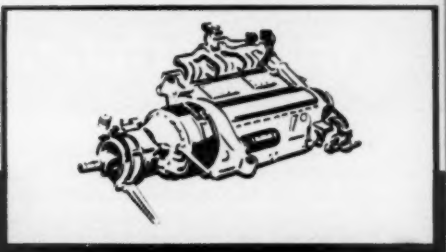
FEDERAL-MOGUL SERVICE, DETROIT 13, MICHIGAN

(Division of Federal-Mogul Corporation)

Ask your Federal-Mogul Jobber!

Why wait?

for other manufacturers to catch up?



The "miracle high compression engines of tomorrow" are available to you in today's Twin Coaches!

. . . and Twin Coach has been building them since 1945 for gasoline and high octane propane

Recent announcement (see pages 2 and 3) by a prominent manufacturer of a new, experimental 12 to 1 compression ratio engine has naturally aroused unusual interest in the transit industry. As the pioneer builder of high compression commercial engines (ratios up to 14 to 1) and the originator of the world's first complete line of propane vehicles, Twin Coach feels qualified to present definite facts regarding savings inherent in their operation. We believe that data in the following pages merits your careful reading and consideration.

L. J. Fageol

President
Twin Coach Company

SEE PAGES 2 AND 3

FAGEOL
TWIN COACH
KENT-OHIO

TWIN COACH COMPANY
KENT, OHIO

Leading automotive engineers agree that spark ignition, high compression engines (of the Twin Coach type) offer maximum transportation economy and efficiency!

• Typical of many recent expressions by automotive experts was a presentation on May 3 before the American Petroleum Institute by Charles L. McCuen, General Motors vice president and general manager of GM Laboratories Division. In introducing a new, experimental 12 to 1 compression ratio engine, Mr. McCuen announced results of a comprehensive fuel-engine survey. The latter was intended to indicate how engine builders and the petroleum industry can cooperate to reduce fuel bills and save vast quantities of motor fuel.

The following direct quotations (from an official GM release on Mr. McCuen's survey) clearly emphasize, in our opinion, the superiority of high compression engines. They offer further proof of operating advantages which the Twin Coach Company has consistently advocated since 1945.

1 ". . . for almost 75 years engineers have recognized that the fundamental method of increasing engine efficiency is to increase compression ratio. GM research engineers continue to believe this remains the main avenue of future improvement . . ."

2 ". . . engines of many types have been examined — diesels, semi-diesels and other oil burning engines of many designs . . ."

"Intensive research indicates that further development of the spark ignition engine via high compression, still offers motorists the most economical transportation . . ."

3 "The 12 to 1 engine should aid both auto and petroleum industries in planning future programs for more efficient engines and higher octane fuels . . ."

4 "Higher compression ratios will mean great savings to motorists in fuel costs and petroleum refineries in oil conservation . . ."

5 "Further development of high compression engines indicates possible trend toward lighter, smaller engines using less materials, less heat waste in cooling systems and over-all design improvements . . ."

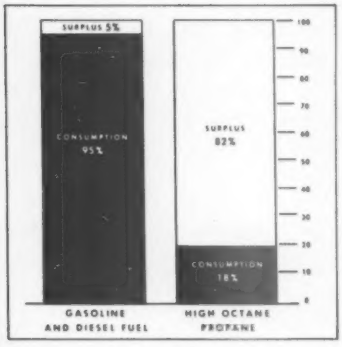
The Fageol Twin Coach high compression engine was announced in 1945 by L. J. Fageol. These engines have been used in all Twin Coaches (gasoline and high octane PROPANE) since that date.

Twin Coaches, operating today on high octane propane, offer NOW all of the advantages that are predicted for the "miracle engines of tomorrow".

WHY WAIT? Savings and economies made possible by Twin Coaches today will increase during the amortized life of the vehicles, as fuel taxes are inevitably equalized, propane distribution and storage is broadened and the present relative cost advantage of propane becomes more pronounced. The latter is a certainty, due to rapidly increasing surpluses of propane as compared to dwindling reserves of other fuels.

TWIN COACH COMPANY
KENT, OHIO

Propane is the best motor coach fuel for today - and the future!



● On the basis of superior performance, low price, virtually unlimited available supply and conservation of America's natural fuel resources, propane is deserving of careful study by every transit executive.

Propane saves up to 2 cents per mile on fuel . . . reduces maintenance expense to a new minimum . . . gives up to 50% more mileage between engine overhauls . . . eliminates obnoxious exhaust fumes and smoke.

AS GASOLINE AND DIESEL FUEL PRICES HAVE GONE UP, COST OF PROPANE HAS COME DOWN!

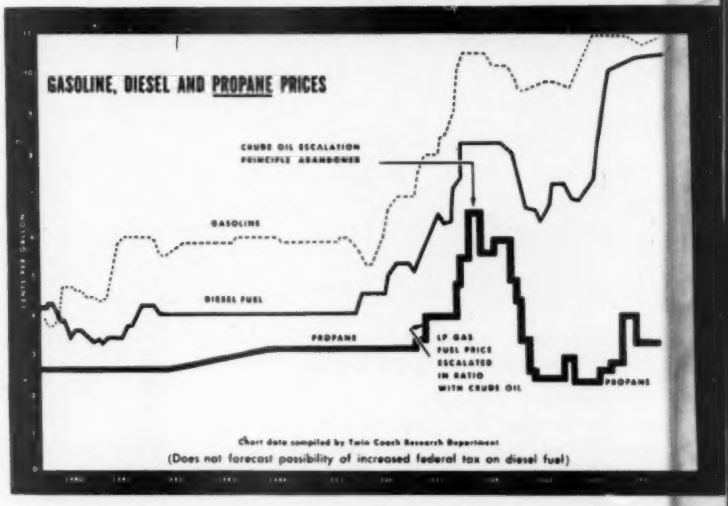
Cost of propane has remained far lower than either gasoline or diesel fuel. Huge propane surplus and continued expansion of storage and distribution facilities indicate long-term continuance of this trend.

PROPANE SUPPLY FAR EXCEEDS FORESEEABLE DEMAND!

At present 95% of America's gasoline and diesel fuel production is being utilized to satisfy our daily requirements. There is a bare 5% surplus.

By sharp contrast, only 18% of the nation's total propane capacity is being used today. There is a vast, available surplus of 82%, representing 13½ billion gallons of unused propane capacity. And — despite its steadily increasing employment in buses and trucks — the propane surplus is growing larger day-by-day. It represents a sure guarantee that propane prices will remain low by comparison with gasoline or diesel fuel.

Propane is not a critical war material. In event of fuel shortages, it seems probable that propane will remain ration-free.


GASOLINE, DIESEL AND PROPANE PRICES
CRUDE OIL ESCALATION PRINCIPLE ABANDONED
GASOLINE
DIESEL FUEL
PROPANE
LP GAS FUEL PRICE ESCALATED IN RATIO WITH CRUDE OIL
PROPANE
Chart data compiled by Twin Coach Research Department
(Does not forecast possibility of increased federal tax on diesel fuel)

PETROLEUM INDUSTRY CITES HUGE AVAILABLE PROPANE SUPPLY . . . PREDICTS GREAT EXPANSION IN USE OF PROPANE

The following are excerpts from a paper presented at the SAE annual meeting by R. C. Alden and F. E. Selim of the Phillips Petroleum Company. They are typical of recent expressions by petroleum engineers relative to LP-Gas. (Copies of complete paper available upon request.)

". . . both the immediate practical availability and the long range potential availability (of propane) will be sufficient with a wide margin of safety for any practical development program."

"Of greatest interest is the price advantage for propane . . . this decline in the relative price of propane reflects the condition of oversupply . . ."

". . . it seems reasonable to anticipate that prices of distillate oils (diesel fuel) will more nearly reflect the cost of crude oil and the market value of gasoline in the future. In contrast, LP-Gas is faced in the immediate future with a larger excess of production . . ."

"Last, but by no means least, of the incentives for the use of LP-Gas as a direct motor fuel is that of conservation of our natural fuel resources."

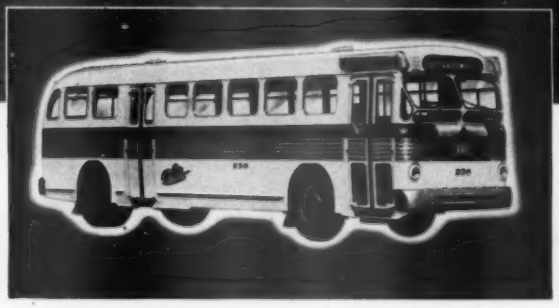
NATIONAL NETWORK OF BULK PLANTS MAKES PROPANE AVAILABLE EVERYWHERE

Local plants shown above are being rapidly augmented by installation of a large number of recycling plants. These will be installed at distribution centers on the petroleum pipe line network.

The Transit Trend is to Propane Twin Coaches!

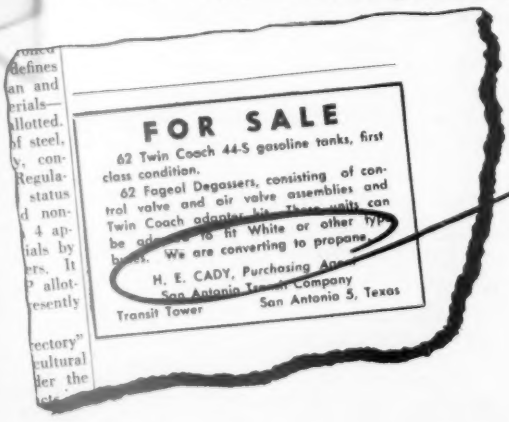
Transit's mass movement toward propane — begun last year when Fort Wayne Transit, Inc., Asbury Rapid Transit System (Los Angeles), Omaha & Council Bluffs Street Railway Co., Kansas City Public Service Co., Galveston Transit Co., Chicago Transit Authority and others voted an enthusiastic "yes" on propane — continues to gain momentum.

Repeat deliveries are now being made to properties like Wichita which was one of the first of the nation's transit companies to operate Propane Twins.



WICHITA ADDS 10 MORE PROPANE TWINS! NOW HAS FLEET OF 84

Wichita Transportation Corporation, Wichita, Kansas, purchased its first Propane Twins in May, 1950. Following successful operation, it then converted 62 of its postwar Twins to propane. The company added 10 more new Propane Twins last November. And — the additional 10 just placed in service brings its total to 84.


FOR SALE
62 Twin Coach 44-S gasoline tanks, first class condition.
62 Fageol Degassers, consisting of control valve and air valve assemblies and Twin Coach adapter kit. These units can be adapted to fit White or other type buses. We are converting to propane.
H. E. CADY, Purchasing Agent
San Antonio Transit Company
Transit Tower
San Antonio 5, Texas

"WE ARE CONVERTING TO PROPANE..."
——— SAYS SAN ANTONIO

This ad is reprinted from "Passenger Transport" (May 11).

PROPANE TWIN COACHES ARE ALWAYS AVAILABLE FOR DEMONSTRATION ON YOUR PROPERTY

FAGEOL Twin Coach KENT · OHIO

TWIN COACH COMPANY • KENT, OHIO

Special Heat-and-Oil Resistant Construction Helps Keep Your Costs Down

Here's a new radiator hose that will withstand 100° F. higher ambient temperature* than ordinary hose—and offers unusual resistance to heat, gas fumes and oil that cause ordinary hoses to char and blister. As a result, Thermoid BT Neoprene Hose stands up under the severest conditions and helps keep operating costs down.

Thermoid's new BT Neoprene Hose has already earned wide acceptance among operators of bus and truck fleets. Ask your jobber—or mail the coupon—for additional information. Give Thermoid BT Neoprene Hose a test on the toughest job in your fleet. This is the hose you have been looking for.

**Ambient temperature—the temperature outside the hose that causes ordinary hose to blister, char and deteriorate.*

NOTE THESE SPECIFICATIONS

Withstands 100° F. higher operating temperature than ordinary hose. Offers 4 times greater resistance to oil, grease and gas fumes.

Inner Tube. Average thickness 3/32". Compounded from Neoprene to resist heat, oil and anti-freeze.

Reinforcement consists of woven fabric thoroughly frictioned on both sides with a Neoprene compound and plied on a 45° bias for maximum resistance to collapse. This plied construction also provides flexibility to withstand misalignment and vibration.

Outer Cover. 1/32" Neoprene cover resists heat and protects hose from oil and grease.

Available in all standard sizes, up to and including 1¼" ID, 2-ply construction, wall thickness 3/16". Over 1¼", 3-ply construction, wall thickness 15/64".

Thermoid
Thermoid Company • Trenton, New Jersey

the standard of precision processing in brake lining, brake blocks, hydraulic fluid, cylinder assemblies, hydraulic brake parts.

Want to see a sample?

Thermoid Company, Trenton, New Jersey

I would like to see a sample of Thermoid's new BT Neoprene Hose.

Name _____

Company _____

Address _____

City _____ *Zone* ____ *State* ____

For extra miles in heavy-duty truck service...

Sealed Power

PAX Pistons and Assemblies

SEALED POWER PAX PISTON—Lo-Ex* virgin aluminum alloy with silicon base, which dissipates heat better. Special Eboniting process assures smoother-running engine, because piston surface is oil-impregnated, oil-absorbing. T-slot design, cam ground, with rugged internal design for extra strength and most efficient heat transfer.

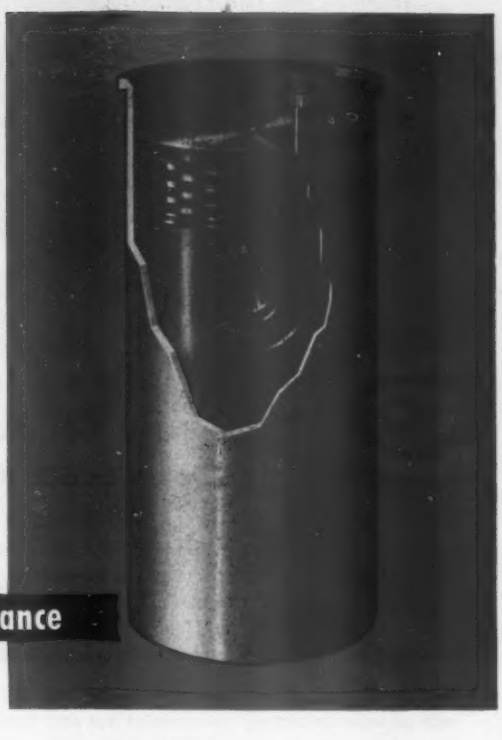
SEALED POWER SLEEVE—uniformly machined from castings with unusually fine grain and dense molecular structure for extreme wear-resisting qualities.

SEALED POWER GI-60 CONTRACTING GROOVE INSERT—Puts spring-steel armor plate at point of greatest wear, the top ring groove. The only piston on the market in which this section can be replaced for a few cents.

SEALED POWER RING SET—Sealed Power Piston Rings, specifically engineered to do the best possible job in the make and model specified.

SEALED POWER PISTON PIN—Sealed Power Double Lapped Piston Pins of special analysis steel are triple heat-treated, and tested for hardness. Each pin is individually fitted to its own PAX Assembly.

*Registered trade mark of Aluminum Co. of America.



All matched for peak performance

Write for name of nearest distributor

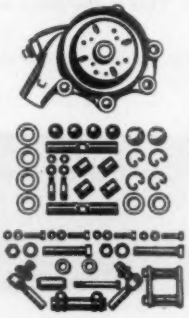
SEALED POWER CORPORATION
MUSKEGON, MICHIGAN

Always use Sealed Power parts for best results

HEAVY DUTY PISTONS—Aluminum or cast iron as indicated; exclusive T-slot design, cam ground, ruggedly designed, heat treated. Equal to or better than original equipment.

WET OR DRY SLEEVES—Machined from closely controlled castings, with exceptionally fine grain and dense molecular structure for long wear.

VALVES—Sealed Power Valves and valve parts are made from the correct grade of chrome nickel alloy steel for each engine, for finest performance and maximum service.



WATER PUMPS—Manufactured from finest quality materials to highest standards. Our line is complete.

KING BOLTS & BUSHINGS—Manufactured from highest quality forgings, and heat treated to meet your exact requirements.

TIE RODS & SHACKLES—Sealed Power Tie Rods, Spring Shackles, and Front Wheel Suspension Parts meet specifications of original equipment.

Fine Features...

PHOTOGRAPH FROM DU BARRY BEAUTY PREPARATIONS BY RICHARD HUDNUT

make fine seating too...!

SEAT No. 1150

Removable, zippered slip covers are a feature of the #1150. Slip covers simply zip on and off backs and seat cushions. This exclusive Karpen feature on the #1150 makes a simple, fast and economical method of removing covers for mending and cleaning. Zip-on seat covers are another first by Karpen...whose original and advanced designs are often imitated and accepted as standard in the transportation industry.

The Karpen #1150 features additional comfort with "body-contour engineering," new "relax" position—adjustable recliner and finger tip control.

S. KARPEN & BROS. TRANSPORTATION SEATING DIVISION
INTERNATIONAL FURNITURE COMPANY
624 South Michigan Avenue, Chicago • One Park Avenue, New York

George B. Cross Company Exclusive Sales Agents

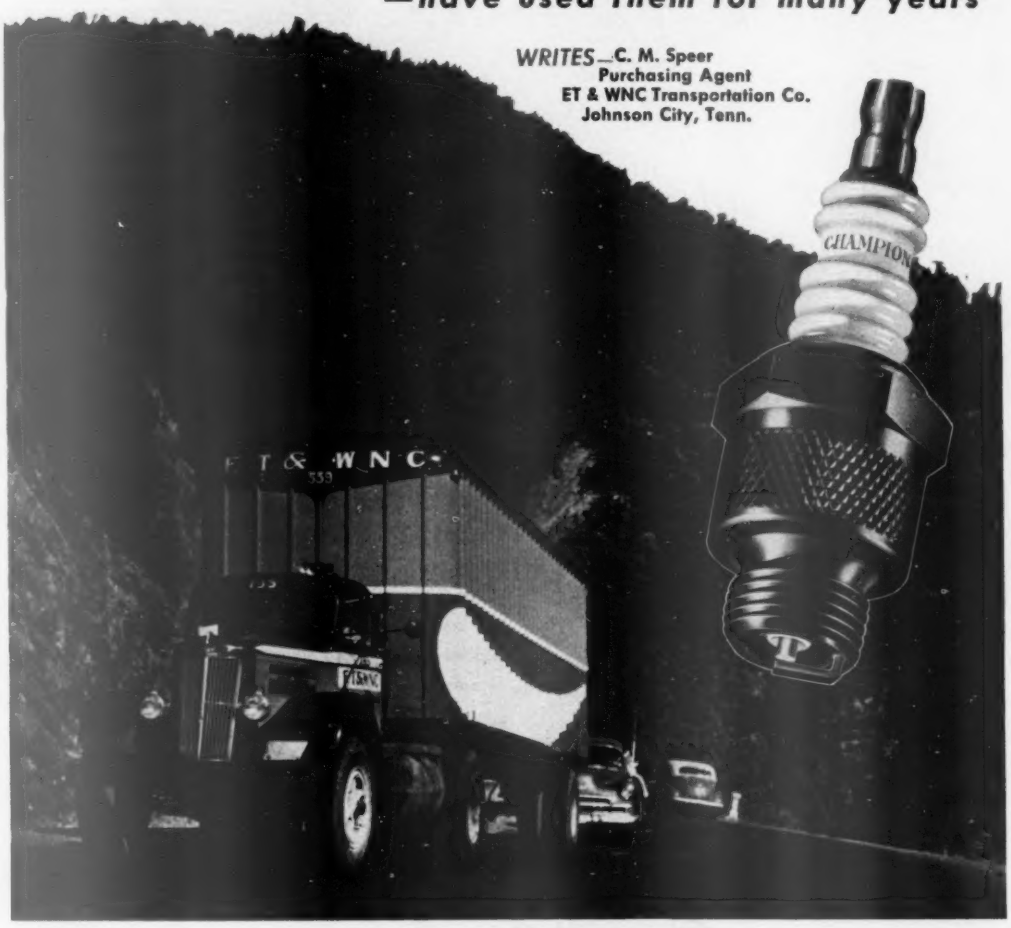
KARPEN SEATING...POINT OF CONTACT BETWEEN THE COMPANY AND ITS PASSENGERS

RUGGED BLUE RIDGE MOUNTAIN ROUTES
EXTRA TOUGH ON SPARK PLUGS . . .

"BUT CHAMPIONS

Give us the best of service in our heavy-duty operations —have used them for many years"

WRITES—C. M. Speer
Purchasing Agent
ET & WNC Transportation Co.
Johnson City, Tenn.



***FOLLOW THE EXPERTS*—Specify Champions for Your Fleet!**

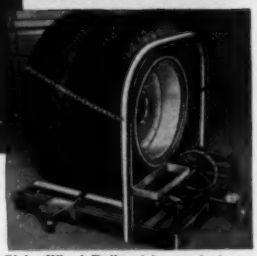
Listen to the CHAMPION ROLL CALL . . . Harry Wismer's fast sportscast every Friday night, over the ABC network . . . CHAMPION SPARK PLUG COMPANY, TOLEDO 1, OHIO

One man easily handles heavy wheel units with a GLOBE WHEEL DOLLY!

He just rolls 'em off and rolls 'em on! The Globe Wheel Dolly handles single or dual wheel assemblies up to 1,800 pounds . . . puts an end to time-wasting, costly "wheel-wrestling" matches.

The Globe Wheel Dolly is the fastest and safest on the market. Dual, compensating rollers automatically adjust to variations in wheel diameters and to the pitch of the jacked-up vehicle. Patented hand wheel gives micrometer adjustment to engage wheel and axle perfectly picking up the wheel from the floor or off the axle spindle. Safety chain holds wheel assembly firmly against frame. Oversize handles assure easy manipulation, and a handy tray is provided for tools, nuts, washers, bearings.

Remember! *One* man handles the heaviest wheel assembly with a Globe Wheel Dolly! He just rolls the dolly into place . . . slides the unit off the axle . . . rolls the unit wherever he wants it on the dolly's free-rolling swivel casters. This adds up to *safer*, faster handling of heavy wheels—and substantial savings in time and labor.



Globe Wheel Dolly picks up single or dual wheel assemblies off axles and rolls them away. Rolls them back again and slides them on the axle. The job is done in a jiffy—safely!

Simple, rugged construction assures easy operation, long service.

Mail this coupon now!

GLOBE HOIST COMPANY 1000 E. Mermaid Lane
Philadelphia 18, Pa.
(Factories at Des Moines, Iowa and Philadelphia, Pa.)

GLOBE

"THE BEST LIFT"

The World's Most Complete and Versatile Line of Lifting Equipment

Globe Hoist Company BT-324
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Philadelphia 18, Pa.

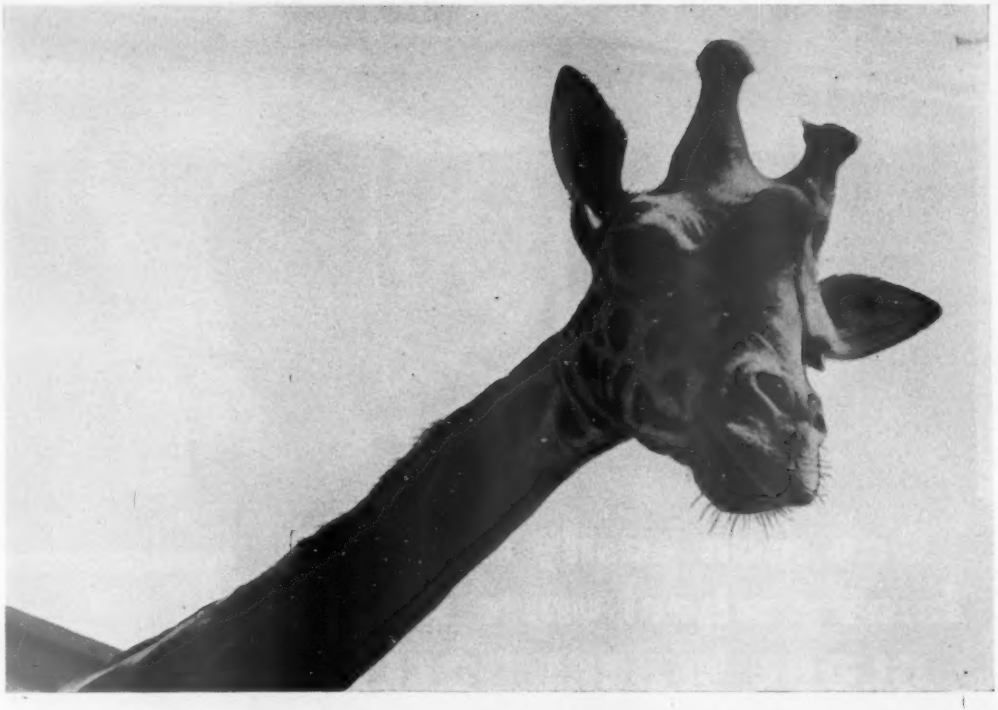
Please send me free illustrated circular on the Globe Wheel Dolly.

Name.....

Company.....

Street Address.....

City and Zone.....State.....



S-T-R-E-T-C-H

Your Maintenance Dollars with

VEEDOL 90 H.D.

VEEDOL 90 H.D. can s-t-r-e-t-c-h your maintenance dollars to the limit, by prolonging the period between major overhauls. That's because special kinds of protection are designed into VEEDOL 90 H.D.'s "Film of Protection."

The most modern additives known to petroleum science are blended with the natural stable oil in VEEDOL 90 H.D. to produce a motor oil that reduces gum and sludge formation in motors, protects bearings against corrosion, and minimizes lacquering of pistons and valve stems . . . *even under continuous full-throttle operation!*

If you want more "give" from your maintenance dollars, start specifying VEEDOL 90 H.D.!

CLEANS AS YOU DRIVE!

VEEDOL OILS AND GREASES

TIDE WATER ASSOCIATED OIL COMPANY

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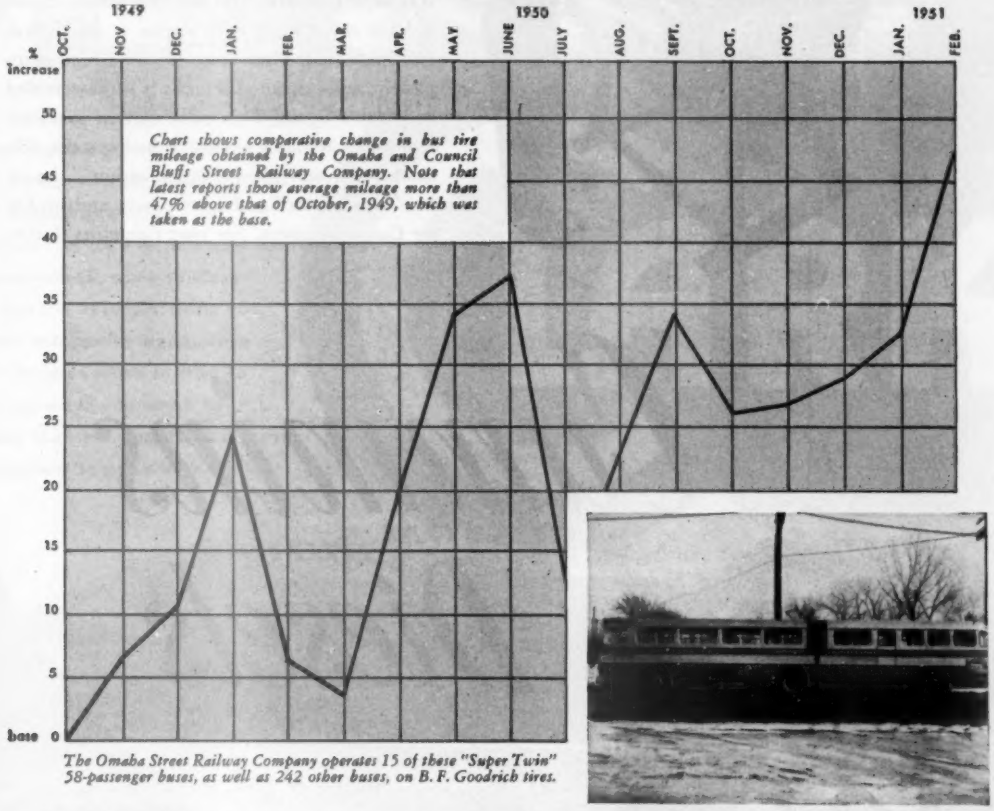
B.F.Goodrich

Bus tires with nylon shock shield boost Omaha Railway mileage by 47 per cent



The Omaha Street Railway Company operates 15 of these "Super Twin" 58-passenger buses, as well as 242 other buses, on B. F. Goodrich tires.

THE 258 buses of the Omaha and Council Bluffs Street Railway Company roll more than 7 million miles annually over urban routes and since 1929, exclusively on B. F. Goodrich tires.

City driving subjects tires to severe wear because of frequent stop-start operations and brake applications. Yet in a recent 16-month period, Omaha Railway increased its tire mileage by more than 47%.

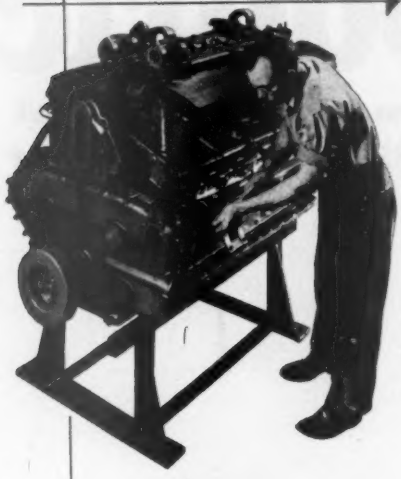
Such an increase, the company feels, results from the special tread and the protection of the nylon shock shield, built between the cord body and tread of BFG Mileage C tires. The extra strength and resistance to deterioration from heat of this shock shield has resulted in longer casing and sidewall life — better resistance to road impact and bruises.

Layers of strong, elastic nylon cord absorb and distribute impacts, actually shield the body of the tire. This exclusive BFG feature gives you the added savings of greater average mileage, increased bruise resistance, less danger of tread separation and more recappable tires. And Mileage C tires have a specially-compounded, extra-thick tread that is built to take the wear and tear of stop-start service.

You'll get increased mileage and better road service—*without* additional air pressures — from B. F. Goodrich bus tires. For real tire economy, see your B. F. Goodrich dealer today, or write *The B. F. Goodrich Company, Akron, Ohio.*

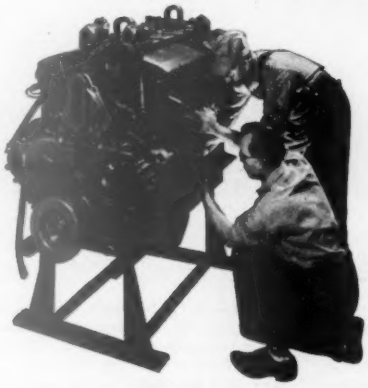
RESEARCH KEEPS
B.F.Goodrich
FIRST IN RUBBER

BUILT NOT ONCE BUT TWICE!



Cummins is the custom-builder of the Diesel industry. Each engine is built to *fit the job*—and the individual piece of equipment in which it is to be installed. And *every* Cummins engine is built *twice*. First, each engine is assembled, run-in tested. Then it is disassembled completely, and inspected. Finally it is reassembled and tested *again*. This extra care in precision building, Cummins exclusive fuel system, efficient parts and service organization . . . mean *less* "down-time" and *more* power and profits for Cummins users. *See your Cummins dealer.*

Cummins®
CUSTOM BUILT *Diesels*



Lightweight High-speed Diesel Engines (50-550 hp)
for: on-highway trucks
off-highway trucks • buses
tractors • earthmovers
shovels • cranes
industrial locomotives
air compressors
logging yarders and loaders
drilling rigs
centrifugal pumps
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CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA
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Diesel power by CUMMINS

CUMMINS Diesel DIESEL

TRADEMARK REG. U. S. PAT. OFF.

You see
more and more new designs
for automotive equipment. Axles
are a good example . . . if
you want an axle to fit a new or
special vehicle, come to Clark.
You find the essential basis of
broad automotive experience
that teaches when to stick to
the old ways and when to
dare the new. You'll find it good
business to work with Clark
CLARK

SEE
NEXT PAGE
FOR MORE ABOUT
CLARK PRODUCTS

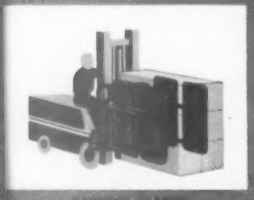
CLARK EQUIPMENT COMPANY, Buchanan, Michigan

Other Plants: BATTLE CREEK, JACKSON, MICHIGAN

MORE FOR YOUR MONEY IN CLARK Attachments

You *get more* out of your Clark fork-lift trucks when you use CLARK attachments. You get literally many machines in one — machines of vastly broadened usefulness that will do more things; and you get it at a cost that is quickly and painlessly absorbed.

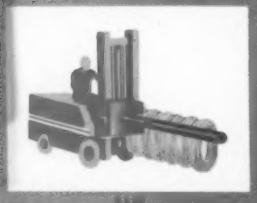
As an easy move toward getting More for Your Money, ask the Clark dealer about "attachments"—he's listed in the Yellow Pages of your Phone Directory; and send the coupon for helpful literature.


CARTON CLAMP

BRICK FORKS

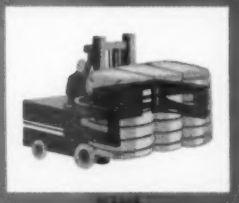
CRANE

ROTATING DEVICE


RAM

SHOVEL

BARREL DEVICE


CLAMP

CLARK ELECTRIC AND GAS POWERED **FORK TRUCKS**
AND POWERED HAND TRUCKS · INDUSTRIAL TOWING TRACTORS

INDUSTRIAL TRUCK DIVISION · CLARK EQUIPMENT COMPANY · BATTLE CREEK 35, MICH.
Please send: ☐ Basic Facts ☐ Condensed Catalog
Name _____
Firm Name _____
Street _____
City _____ Zone ____ State _____
AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

By all means send for and study CLARK's newest booklet, "Basic Facts About Materials Handling." It's too good to miss.

PRODUCTS OF CLARK—TRANSMISSIONS · FORK TRUCKS & TRACTORS
POWERED HAND TRUCKS · GEARS & FORGINGS · RAILWAY CAR TRUCKS
AXLE HOUSINGS · ELECTRIC STEEL CASTINGS · AXLES · TRACTOR UNITS

Positive roller alignment

(Another reason why **TIMKEN** *bearings are first choice with bus manufacturers)*

The picture at the left shows the wide area contact between roller ends and cone rib of Timken® bearings. It's this wide area contact that keeps rollers stable, prevents skewing, eliminates the need for alignment by the cage. The result is increased load capacity, minimum friction, long bearing life.

Like all other major improvements in tapered roller bearing design, the principle of positive roller alignment was developed by the Timken Company. And it's another reason Timken bearings are first choice with leading bus manufacturers.

Only Timken bearings give you *all* these advantages: (1) advanced design, (2) precision manufacture, (3) rigid quality control, (4) special analysis steels. So make sure the tapered roller bearings you use for replacements are always marked "Timken". And send now for the free booklet, "Timken Tapered Roller Bearings, Their Care and Maintenance". Write Dept. TB-8, The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

SINCE THEY'RE BEST WHEN THE BUS IS NEW, THEY'RE BEST FOR REPLACEMENT, TOO!

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ⊂⊃ THE TIMKEN TAPERED ROLLER ⊂⊃ BEARING TAKES RADIAL ◐ AND THRUST →◐← LOADS OR ANY COMBINATION →✳←

Worth Repeating Again and Again

"THEY FORGOT TO COLLECT THE ADMISSIONS"

EVERY FARE
DEPOSIT MUST BE
AS CLEAR AS SHOWN
IN THIS PICTURE. Collections determine profit.

Forty-one years of experience have proven the psychological effect of a segregated fare depository with an all-view inspection for driver, checker and passenger. It's dependable fare assurance.

Insist on fare segregation, ease of inspection and minimum maintenance provided by Johnson equipment as illustrated. Use the best by test.

Your collection problem is ours . . . why not call us?

Johnson Type K

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OUR 41st YEAR

Johnson

Johnson Fare Box Company Subsidiary of Bowser, Inc.
4619 North Ravenswood Avenue, Chicago 40, Illinois · New York Office: 420 Lexington Avenue, New York 17, N. Y.

Equip NOW

to save time, increase efficiency and profits with

SIOUX TOOLS

SIOUX Drill and Hole Saw in operation. One of a number of combinations that you can rely on to deliver... if you have SIOUX Equipment.

You can do almost anything... yes, anything, with them and depend upon them to deliver.

Sold Only

Through Authorized SIOUX Distributors

STANDARD THE WORLD OVER

"Greatly Aided our Entire Operation from an Economy Standpoint"

Says MR. HAROLD MEHL, Supt. of Equipment, Illinois Highway Transportation Co., Peoria, Illinois

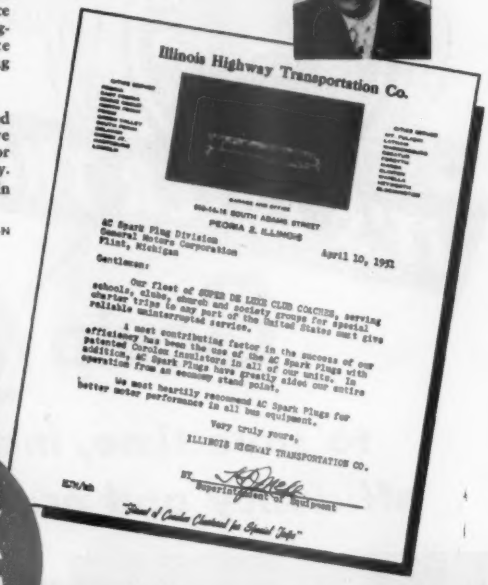
Illinois Highway Transportation Co. is really two companies: First, a public service corporation operating a rigidly scheduled bus service between a score of Illinois cities; Second, a company offering super de luxe club coaches for chartered trips anywhere.

Their 43 buses travel over 1,500,000 miles a year.

For 20 years, Illinois Highway Transportation Co. has used AC Spark Plugs—and now use them exclusively. They give credit to AC Plugs with patented *CORALOX* Insulator for helping to achieve their fine record of economy and reliability.

AC Commercial Type Spark Plugs will give superior service in your engines, too.

AC SPARK PLUG DIVISION GENERAL MOTORS CORPORATION



Illinois Highway Transportation Co.

PEORIA 2, ILLINOIS

AC Spark Plug Division
General Motors Corporation
Flint, Michigan

April 10, 1952

Gentlemen:

Our fleet of SUPER DE LUXE CLUB COACHES, serving schools, clubs, church and society groups for special charter trips to any part of the United States must give reliable uninterrupted service.

A most contributing factor in the success of our efficiency has been the use of the AC Spark Plugs with patented Coralox Insulators in all of our units. In addition, AC Spark Plugs have greatly aided our entire operation from an economy stand point.

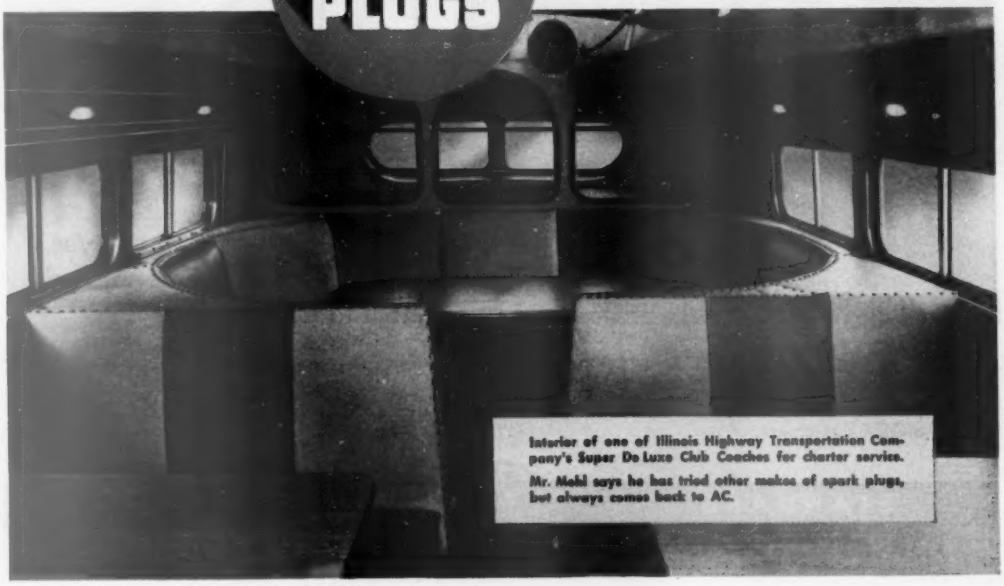
We most heartily recommend AC Spark Plugs for better motor performance in all bus equipment.

Very truly yours,

ILLINOIS HIGHWAY TRANSPORTATION CO.

BY _____
Superintendent of Equipment

"Friend of Coaches Chartered for Special Trips"



Interior of one of Illinois Highway Transportation Company's Super De Luxe Club Coaches for charter service.

Mr. Mehl says he has tried other makes of spark plugs, but always comes back to AC.

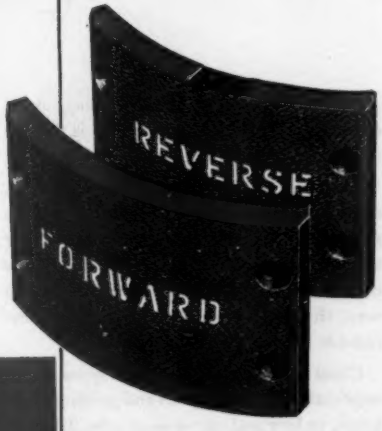
you need

BALANCED BRAKES

Emergencies do happen . . . even to the most careful drivers! That's why every driver, and every operator, should have the extra safeguard of *balanced* brakes.

Different shoes, even in the same brake, do different work, need different kinds of linings. Grey-Rock gives you balanced combinations of friction materials to provide smoother, safer stops . . . with equal wear on all shoes, hence *greater mileage.*

For each unit of your fleet, there's a special combination of Grey-Rock Blocks . . . *balanced* to eliminate dive, grab, hard pedal, and other brake ills. For better brake jobs and lower maintenance costs, order Grey-Rock Blocks from your jobber.



Grey-Rock

BALANCED BRAKE BLOCKS

RM

GREY-ROCK DIVISION of Raybestos-Manhattan, Inc., MANHEIM, PA.

RAYBESTOS-MANHATTAN, INC., Manufacturers of Brake Linings • Brake Blocks • Clutch Facings
Fan Belts • Radiator Hose • Packings • Mechanical Rubber Products • Rubber Covered Equipment
Asbestos Textiles • Powdered Metal Products • Abrasive and Diamond Wheels • Bowling Balls

Mobilizing Motor Transport

AS A PATRIOT might exclaim today, about operating a fleet: "My only regret is the loss of a single hour by any unit."

Every reduction of maintenance time . . . every added productive mile . . . every replacement saved . . . now "advances the ball" for the nation. Reason enough why lubricants considered adequate heretofore are giving way, throughout many a fleet, to extra-capable Cities Service lubricants.

Cities Service makes the exact types for all applications, from engines and gearing of all kinds, to lifts and rare special jobs. The specified lubricant at the specified time is what you'll get from Cities Service . . . keenly progressive, responsible, *and consumer-minded.* Write to CITIES SERVICE OIL COMPANY, Room 86, Sixty Wall Tower, New York City 5. Or phone the office nearest you.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Leyland Motors has been privileged to serve the New South Wales Department of Road Transport and Tramways since it took over the operation of the Sydney and Newcastle Services in 1930. In fact it was due, in no small measure, to the overall efficiency of the oil-engined Titan, introduced there in 1934, that the Department formulated a plan, three years later, for the gradual replacement of trams by buses.

Since the war steady progress has been made in this re-organisation in which Leyland has played an important part. By the end of last year 417 Leylands were in commission in a fleet of 1037 modern diesel buses of three different makes. For the immediate future, Leyland has already in hand for the Department a further 184 chassis, of which 50 are to be the latest maximum-capacity under-floor-engined Royal Tigers.

Leyland

SOLD AND SERVICED IN EVERY PART OF THE GLOBE

LEYLAND MOTORS LIMITED

Head Office and Works · LEYLAND · LANCS · ENGLAND

Export Division · HANOVER HOUSE · HANOVER SQUARE · LONDON · W.1

CHALK UP LOWER COSTS

Your nearby United Motors distributor can help you chalk up an important victory in the battle with rising costs. Fleet operators all over America find that the United Motors man can offer dollars-and-cents help in reducing both *repair* costs and *running* costs. Here are just three of the money-saving services he can give you:

1. **Leading names in the original-equipment parts industry.** These are the identical parts used on a big percentage of the nation's trucks, buses and cars. Their established quality means better performance, longer life and lower cost per mile.

2. **Parts for old as well as new models.** There are twenty United Motors warehouses and hundreds of inventories strategically located across the nation. These insure delivery of any part in the shortest possible time.

3. **Time-saving service.** Because your United Motors distributor is in many cases a single source for United Motors lines, he can save you hours of time, no matter how many vehicles you operate.

UNITED SERVICE MOTORS

- DELCO Batteries
- AC Gauges, Speedometers and Rebuilt Fuel Pumps
- SAGINAW Jacks
- MORAINE Engine Bearings
- DELCO Radio Parts
- ROCHESTER Cigar Lighters
- HYATT Roller Bearings
- INLITE Brake Lining
- HARRISON Heaters
- GUIDE Lamps
- DELCO Clocks
- NEW DEPARTURE Ball Bearings
- DELCO Shock Absorbers
- MORAINE Gasoline Filters
- HARRISON Thermostats
- DELCO-REMY Starting, Lighting and Ignition
- KLAXON Horns
- HARRISON Radiators
- ROCHESTER Carburetors
- DELCO Hydraulic Brakes

Many of the advantages you enjoy when dealing with your United Motors distributor are based on experience. His valuable knowledge in lowering operation and maintenance costs is as near as your phone book. Why not look him up right now?

UNITED MOTORS SERVICE

DIVISION OF GENERAL MOTORS CORPORATION
GENERAL MOTORS BUILDING, DETROIT 2, MICHIGAN

STANDARD ENGINEER'S REPORT

DATA

LUBRICANT: RPM Multi-Service Gear Lub.
UNIT: Heavy-duty final drive
OPERATION: Hauling logs from woods to mill
CONDITIONS: 5 to 16% soft road grades - grit and extreme temp.
FIRM: Camas Lumber Co. Grangeville, Idaho

Special lubricant stops gear trouble where others failed!

UNTIL RPM MULTI-SERVICE GEAR LUBRICANT was used in this differential, gears and lubricant consistently gave trouble within 200 miles of operation. Three other lubricants failed in temperatures and pressures developed on grades "so tough a jeep can't make them." Gears had to be replaced several times. With RPM Multi-Service Gear Lubricant, the unit now has operated without repair for over a year. It is drained completely and refilled only at intervals of 15,000 miles.

THIRTY TO 40 TON LOADS are usual for the tractor and trailer. About 15 miles of a 25-mile haul is on dirt woods roads where grades are 14 to 16%. They are often deep mud from rain and melting snow. Out of the woods on a surfaced road there are 11 miles of constant 5 to 6% grade where high temperatures are developed in drive gears.

REMARKS: RPM Multi-Service Gear Lubricant will give you longer service from both truck and passenger car gears operating in severe service. It is especially recommended for hypoid gears of all types. It comes in several grades to meet all weather and operating conditions.

RPM

TRADEMARK "RPM" REG. U.S. PAT. OFF.

How RPM Multi-Service Gear Lubricant prevents wear in severe conditions

A. Contains a special compound that reacts chemically with metal and forms protective lubricating coating... resists rubbing action of hypoid gear teeth.

B. Withstands extreme pressures and temperatures... highly oxidation resistant. Keeps gears and bearings cool.

C. Inhibitors resist rusting, stop foaming in cases. Lubricates integral bearings and other parts. Will not separate.

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your nearest distributor handling them, write or call any of the companies listed below.

STANDARD OIL COMPANY OF CALIFORNIA
225 Bush Street • San Francisco 20, California

THE CALIFORNIA COMPANY
P. O. Box 780 • Denver 1, Colorado

STANDARD OIL COMPANY OF TEXAS
P. O. Box 862 • El Paso, Texas

Par Performance

Transit Buses

Par . . . the smooth, trouble-free performance that keeps you on the sunny fairway of profitable operation . . . out of the rough of high costs . . . that's what you get with Transit Buses.

Transit Buses are lower in first cost . . . lower in operating cost. Attractive appearance, comfort, greater maneuverability and higher availability are additional features that enable you to provide the kind of service that builds riding.

Get out of the rough and on to the fairway with "par-performing" Transit Buses.

Transit Buses, Inc.

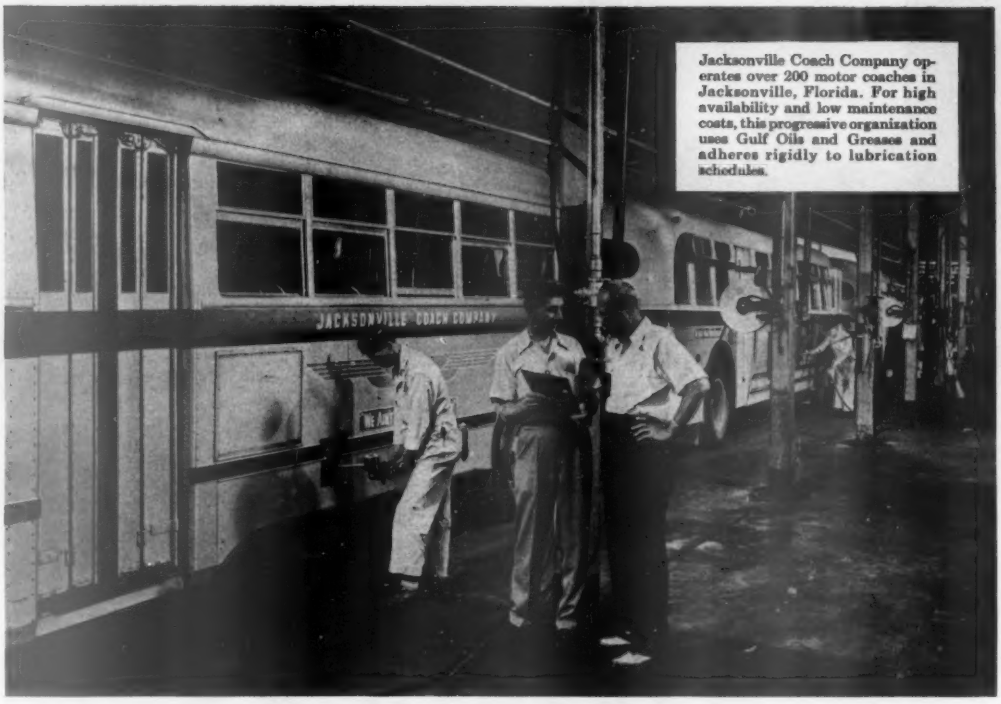
Subsidiary of
CHECKER CAB MANUFACTURING CORP.

Factory
KALAMAZOO, MICH.

Sales Offices
SCHAEFER RD. at ELMIRA
DETROIT 27, MICH.

Transit CCM Buses, Inc.

4575



Jacksonville Coach Company operates over 200 motor coaches in Jacksonville, Florida. For high availability and low maintenance costs, this progressive organization uses Gulf Oils and Greases and adheres rigidly to lubrication schedules.

GULFLUBE MOTOR OIL H. D.

helps Jacksonville Coach Company maintain high availability

In the photo above, you see Michael B. Sara, Superintendent of Equipment and Maintenance of Jacksonville Coach Company, discussing the availability record with J. M. Moore, Vice President and General Manager.

The availability percentage is not available for publication, but we can tell you it is exceptionally high—and Gulflube Motor Oil H.D. gets a large share of the credit. And oil consumption is very low.

Furthermore, Gulflube Motor Oil H.D. helps keep the engines of the Jacksonville Coach Company clean and delivering top performance.

This quality paraffin-base heavy-duty motor oil provides a particularly strong oil film—the kind of film that provides superior lubrication under the toughest operating conditions. Consider these advantages, too:

Gulflube Motor Oil H.D. is an outstanding detergent oil. Rings stay clean and free, insuring better compression and more miles between overhauls.

Foaming in the crankcase is prevented because Gulflube Motor Oil H.D. contains a patented anti-foam agent.

As the Jacksonville Coach Company people have discovered, we believe you, too, will find it profitable to use Gulflube Motor Oil H.D. in your operation.

Why not call the nearest Gulf Office now, and ask a Gulf Sales Engineer to help you with your lubrication and maintenance problems?

FIFTY YEARS OF SERVICE
1901 GULF 1951
PETROLEUM AND ITS PRODUCTS

"RAILS" WERE GOOD

IN CHATTANOOGA, TOO—IN 1867

BUT TODAY IT'S "RUBBER"

Few people laughed at the tiny, brightly painted mule cars that first plodded their way up the streets of Chattanooga, Tennessee, back in 1867! Rather, the townsfolk welcomed this meager beginning in urban transit with the same faith in the future that was leading them through the shaky months following the Civil War. It was a symbol of better things to come.

And better things *have* come to Chattanooga! Lookout Mountain now guards a bustling metropolis that is a far cry from the war-torn town of 84 years ago. Transportation has kept pace with the city's growth, too. In April, 1947, Southern Coach Lines, Inc., completed its 100% conversion from street car service to Rubber-Tired Transit!

Now, four years later, Southern Coach Lines reports complete satisfaction with the record of service its 153 gasoline-operated buses have compiled. The company states that they are easier-riding and far more flexible. They are particularly pleased that buses enable the transit system to expand with the city without the extremely high cost of installing new track.

Build *your* modernization plans around flexible, progressive Rubber-Tired Transit. You'll get better, more efficient service at lower cost!

BE SURE TO SPECIFY TIMKEN-DETROIT AXLES AND BRAKES ON YOUR NEW EQUIPMENT!

All trolley coaches and the *majority* of motor buses built today are equipped with Timken-Detroit Axles and Brakes. They're famous for longer life, lower maintenance costs and top efficiency. They'll make *your* transit system more profitable!

100%!

TIMKEN Detroit AXLES

A PRODUCT OF THE TIMKEN-DETROIT AXLE COMPANY
DETROIT 32, MICHIGAN

Accepted Standard

TRADE MARK REGISTERED

PLANTS AT: DETROIT AND JACKSON, MICH. • OSHKOSH, WIS. • UTICA, N. Y.
ASHTABULA, KENTON AND NEWARK, OHIO • NEW CASTLE, PA.

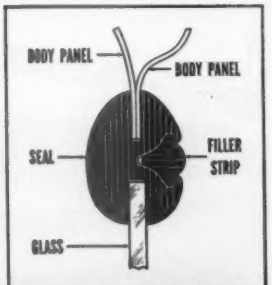
Windshields, like ships at sea, "take water over the bow"

Driving into the teeth of a slashing rainstorm at fifty miles an hour, a windshield takes terrific water impact! And yet, if it's sealed with Inland Self-Sealing Weather Strip, it *won't* leak. It *can't!*

Inland Self-Sealing Weather Strip employs a radically *different* principle. In place of cements and other binders, which inevitably break down, Inland Strip uses the natural resilience of rubber, permanently compressed, to effect the seal. Weatherproofing is *complete* and *permanent!*

Naturally, windshields and fixed windows *will* break occasionally. But *then*, replacement with Inland Strip is an easy, fast, one-man job that saves a lot of operating time, and saves maintenance cost too! Be sure to *specify* Inland Self-Sealing Weather Strip in all new vehicles you order!

INLAND MANUFACTURING DIVISION
General Motors Corporation, Dayton, Ohio



Easy, Fast, Economical!

The seal goes into the body panel, the glass into the seal, and the filler strip into the locking channel. That's all . . . a fast, low-cost, one-man job . . . done once . . . for permanent weatherproofing!

INLAND MANUFACTURING

Self-Sealing Weather Strip
(PATENTED)

Leading Transit Companies Everywhere Say:

Gates Coach Belts "Cut Belt Costs in Half —and Save Costly Delays!"

Literally scores of leading transit companies all over the U. S. have found—from their own carefully kept records—that their belt costs have been actually *cut in half* since they began using the Gates Coach Belt. In addition, they report other savings which they consider even *more important.*

The reasons for the outstanding superiority of this belt are quickly told:—

FIRST, The Gates Coach Belt is made of a special, heat-resisting compound that readily withstands the severe heat often created by the excessive operational strains imposed upon rear engines.

AGAIN, oil is a factor that frequently shortens the life of the ordinary belt. The Gates Coach Belt is *Oil-proof!* Finally, because of the heavier loads a rear engine belt must carry, the Gates Coach Belt has been given immensely *greater tensile strength* by building it with high-tenacity RAYON CORDS—and it is also given a tough, multiple-ply cover of more than *double durability.*

Savings Are Even Greater Than Cutting Belt Costs in Half!

As you well know, the failure of a coach belt can cause great mechanical damage by overheating the engine. The result is not only costly repairs but also bad *traffic delays.* The loss of public good-will and patronage resulting from annoying delays is regarded by many companies as being an even more serious loss than a heavy repair bill.

If you want to cut your belt costs and, in addition, avoid the loss of time and of public good-will you incur when a coach belt fails—just drop us a line right now. A Gates Coach belt specialist—working in close cooperation with your local Gates jobber—will come right to your own place and show you how to have the lowest belt costs and the most efficient belt service you have ever enjoyed.

MAKE SURE that the Coach Belt You Get Is Marked with This **TG***

Look for these letters "TG" on the belt itself—as well as on the label—of every belt you buy for rear engine service. "TG" means that the belt has been specially engineered for Coach Rear Engines. You can be sure of getting the belt designed for this more demanding service only by seeing to it that you are delivered belts which bear the letters "TG".

*REG. U. S. PAT. OFF.

Specially Engineered for REAR ENGINES

Gates

The Mark of SPECIALIZED Research

The Gates Rubber Company

PLAY IT SAFE...

ORDER YOUR Weed Chains NOW!

A Friendly suggestion to all fleet owners:—Look over your tire chains now to see which need new cross chains to replace broken or badly worn ones. Also, check to determine what new chains will be needed next autumn for old as well as new vehicles. While we can still make prompt shipments through our distributors, no one can guarantee what the stock position will be when snow begins to fall.

In ordering new chains specify WEED AMERICAN BAR-REINFORCED, *the best buy in tire chains.*

ORDER through your Weed Chain Distributor

ACCO

York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

In Business for Your Safety

WEED TIRE CHAINS

Tied up with endless repair details?

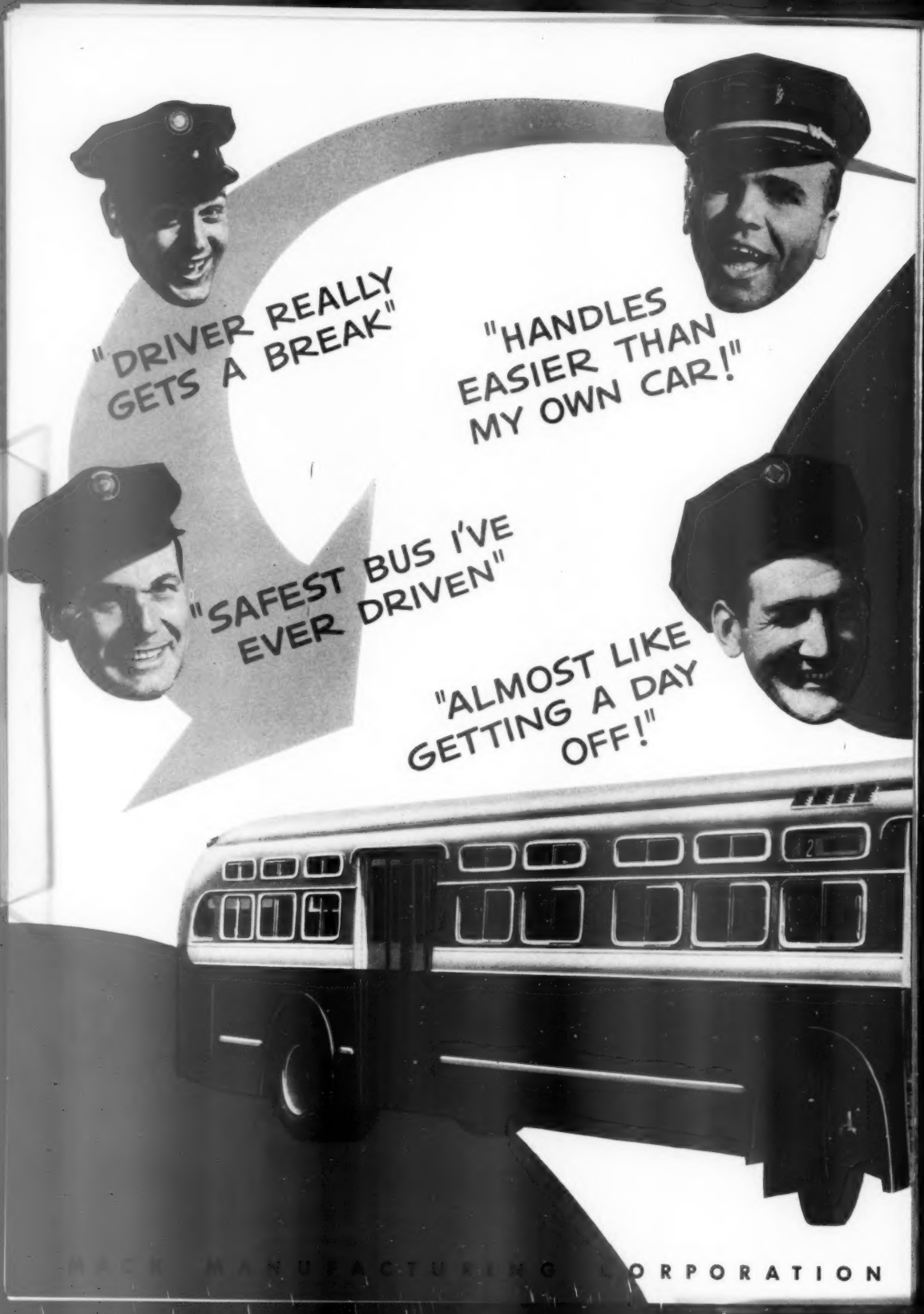
THE fastest possible way to hog-tie a fleet operation is to overlook the major cause of countless minor repair jobs—improper lubrication. Usually a really fine motor oil, like Quaker State HD Oil, can check this trouble.

Quaker State HD Oil, especially tailored for heavy-duty use, goes a long way in reducing annoying repair jobs caused by excessive engine wear. This top-quality oil, refined with the most modern processing equipment is compounded with chemical detergents of highest quality.

Made from 100% pure Pennsylvania grade crude oil, Quaker State HD Oil keeps its body, lubricates thoroughly, protects fully, cushions every friction surface and prevents the formation of sludge, gum and varnish. It actually cleans as it lubricates. Try it in your equipment soon: watch operating costs drop.

QUAKER STATE HD OIL

QUAKER STATE OIL REFINING CORPORATION, OIL CITY, PA.


"DRIVER REALLY GETS A BREAK"
"HANDLES EASIER THAN MY OWN CAR!"
"SAFEST BUS I'VE EVER DRIVEN"
"ALMOST LIKE GETTING A DAY OFF!"
MACK MANUFACTURING CORPORATION

Bus Driver's

MACK C-50

Does that kind of talk sound hard to believe? Not if you could listen in on the man-to-man comments of drivers assigned to Mack C-50's. For here's a bus so vastly superior in handling ease . . . so much more efficient in passenger interchange . . . so markedly safer and sturdier . . . that veteran drivers are its most enthusiastic admirers.

Mack C-50 is the easiest of all buses to handle through its combination of power center steering and sharper turning angle. It expedites passenger interchange through optional double-width entrance and exit doors, wider effective aisle space and more efficient loading areas. Powerful, smooth brakes and the matchless strength of its Fortress Frame construction provide a sense of safety and solidity that proves well founded when emergencies occur.

Moreover, with Mack C-50 you get the three-way economy for which all Mack diesel buses are famous,

—more miles per gallon at less fuel cost per gallon!

—less service needed, easier to service when needed!

—longer vehicle life yields better return on your original investment.

But there's nothing so convincing as first-hand proof. If you're in the growing field for large-capacity, heavy-duty buses, make a date today with your Mack bus representative for a C-50 demonstration . . . check for yourself its all-around advantages.

modernize with

Mack BUSES

outlast them all

Factory branches and distributors for service and parts in all principal cities. In Canada: Mack Trucks of Canada, Ltd.

Bus Division — Empire State Building, New York 1, N. Y.

Spicer

NEEDLE BEARING UNIVERSAL JOINTS

Offer Exclusive Features for Exceptional Services

Design—Rigid one piece forged steel yokes and journal cross carry full torque load and provide precision needle bearing alignment. Simple—sturdy—reliable.

Material—Carefully heat-treated steel forgings to resist fatigue and shock loads. File-hard bearing surfaces to resist wear.

Accuracy—Precision fits and surface finishes assure vibrationless, trouble-free, dependable operation.

Balance—Spicer has unequalled facilities for maintaining very close limits of static and dynamic balance in all units.

Lubrication—After initial pressure lubrication, centrifugal action distributes reserve lubricant to bearing surfaces. Centrally located lubrication fittings allow refilling of lubricant reservoirs with shaft in installed position, without affecting original assembly or balance.

Types and Sizes—Every need in the automotive, industrial, and agricultural field is met by Spicer's broad range of designs and sizes.

Spicer engineers will help adapt Spicer Needle Bearing Joints to your particular needs.

SPICER MANUFACTURING
Division of Dana Corporation
TOLEDO 1, OHIO

47 YEARS OF
Spicer
SERVICE

TRANSMISSIONS • PASSENGER CAR AXLES
CLUTCHES • PARISH FRAMES • STAMPINGS
TORQUE CONVERTERS • UNIVERSAL JOINTS
SPICER "BROWN-LIPE" GEAR BOXES
RAILWAY GENERATOR DRIVES

The Best Costs Less in the Long Run

One look at Fram's mail proves why

WICHITA TRANSIT COMPANY
2000 KEMP BOULEVARD
Wichita Falls, Texas

Fram Corporation
Providence, R.I.

Gentlemen:

For the past two years we have equipped our Southern Coach buses with the Fram oil and motor cleaner, of course, using Fram cartridges and the results have been very satisfactory.

Each 1,600 miles the oil and the cartridge is changed.

We have also installed a Fram cleaner on all our Plymouth and Chevrolet taxicabs, getting the same fine service as on our buses - all told 36 Fram cleaners are presently working for us.

The oil and cartridges are changed weekly on the taxicabs.

Very truly yours,
WICHITA TRANSIT COMPANY
W. D. Stewart
W. D. Stewart, Parts Manager

WDS: mlc

P.S. This letter may be used for publication should you so desire.

This letter, typical of the many in Fram's files, shows how Fram saves time, labor, money for bus operators everywhere . . . proves that the best costs less in the long run!

FRAM
OIL • AIR • FUEL • WATER
FILTERS

Here's why Fram is best for ALL Fleets

Famous Fram Oil & Motor Cleaner, with the Filcron Cartridge, removes particles down to one micron (.000039") . . . protects engines *better, longer!* Cartridges to fit most every make oil filter.

Only Fram offers you Complete Engine Protection! Car, truck and bus engines equipped with Fram Oil & Motor Cleaners, Carburetor Air Filters, Fuel Filters and Positive Crankcase Ventilators are completely protected against engine-killing abrasives and internally-formed contaminants.

Fram Saves Cooling Systems too! New Fram Radiator & Water Cleaner softens, filters and inhibits coolants . . . removes rust, scale and corrosion . . . reduces danger of overheating.

Fram is Unconditionally Guaranteed! Test Fram without risk . . . money back if not satisfied!

Send for FREE Fram Lubri-Graf!

Provides instant visual check on condition of oil and engine. Indicates cartridge changes only when needed. Saves money. Write FRAM CORPORATION, Providence 16, R. I. *In Canada:* J. C. Adams Co., Ltd., Toronto, Ontario.

in the new buses you buy... in buses you overhaul

look to genuine leather

for seat covering of durability . . .
distinction . . . operating economy

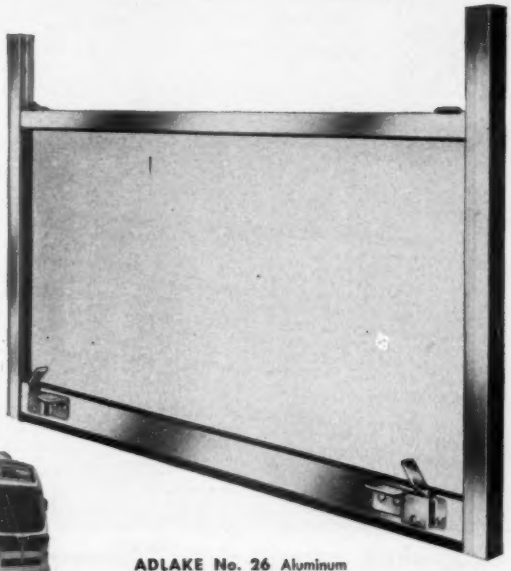
No other material can match Genuine Leather for upholstering all types of vehicles used in mass transportation. For Genuine Leather does not collect and hold dirt . . . washes easily with soap and water . . . is fire and stain resistant . . . sanitary and moth-proof . . . is the one covering that actually improves with age and use. And you can make the seating of your buses more attractive and inviting with Genuine Leather, for it is available in a wide range of smart colors and interesting grains. Specify Genuine Leather for the upholstery of the new buses you add to your fleet . . . replace worn covering in buses now in service with Genuine Leather . . . and enjoy the exclusive advantages that Genuine Leather gives you per rider . . . per mile . . . per trip.

THE UPHOLSTERY LEATHER GROUP • TANNERS' COUNCIL OF AMERICA
100 GOLD STREET • NEW YORK 7, N. Y.

American Leather Manufacturing Company, Newark, N. J. • The Ashtabula Hide & Leather Company, Ashtabula, Ohio
Blanchard Bro. & Lane, Newark, N. J. • Delaware Tanning, Inc., New York, N. Y. • Eagle-Ottawa Leather Company, Grand Haven, Michigan
The Lackawanna Leather Company, Hackettstown, N. J. • Radel Leather Manufacturing Company, Newark, N. J.

with only minimum maintenance

they last as long as the bus



ADLAKE No. 26 Aluminum Bus Sash—removable retaining strip permits quick removal of sash without breaking seal.

Thousands of successful installations prove it! With an *absolute minimum* of maintenance, ADLAKE Aluminum Sash give a lifetime of trouble-free service—and actually last as long as the bus in which they are installed!

Special features in every ADLAKE Sash hold maintenance costs *down* while boosting performance *up*—such as the ADLAKE adjustable guide that controls size and fit—the woven-pile weather stripping that assures complete weather-tightness—and the traditional high quality of all ADLAKE workmanship and material.

What's more, ADLAKE Sash don't stick nor jam, nor create those petty annoyances that may cause bad feeling among your patrons.

For complete information on the full line of ADLAKE Sash, just drop a card to The Adams & Westlake Company, 1112 N. Michigan, Elkhart, Indiana. No obligation, of course.

THE Adams & Westlake COMPANY — Adlake TRADE MARK

Established 1857 • ELKHART, INDIANA • New York • Chicago

Manufacturers of ADLAKE Specialties and Equipment for the Transportation Industry

"the Wagner Rotary Air Compressor unfailingly supplies ample air to assure safe stopping at all times"

Says: C. C. PHARES,
SUPT. OF MAINTENANCE
CITY LINES OF WEST VIRGINIA

February 10, 1950

Wagner Electric Corporation
6400 Plymouth Avenue
St. Louis 14, Missouri

Gentlemen:

The safety and comfort of our passengers is of major concern to us at City Lines of West Virginia.

Our fleet of 70 A.-C. F. Brill Coaches is 100% equipped with Wagner Air Compressors. We have found that the Wagner Rotary Air Compressor unfailingly supplies ample air to assure safe stopping at all times and under all conditions, while requiring little or no maintenance or attention. Then, too, the smooth, quiet operation of these compressors adds to the comfort of our passengers.

These factors, backed by the proven economy of Wagner Air Brakes in our operation, are the reasons why we have standardized on Wagner.

Very truly yours

C. C. Phares

C. C. Phares,
Supt. of Maintenance

CCP:eh

What Mr. Phares says is typical of the enthusiastic statements of many large bus fleet operators who have installed Wagner Air Brakes.

Wagner Air Brakes are the product of more than twenty years of brake engineering knowledge—experience gained in the manufacture of brake systems and brake parts for the automotive industry. This proven brake knowledge is your assurance that when you install Wagner Air Brakes you will not only reduce brake maintenance costs but will insure safe stopping at all times.

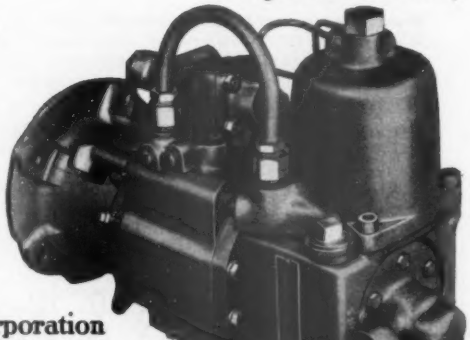
Write for Catalog KU-201

Safety is of vital importance in public transportation. It will pay you to get complete information on Wagner Air Brakes today.

Wagner Air Brakes

THE ONLY SYSTEM WITH THE ROTARY AIR COMPRESSOR

One of the features that has made Wagner Air Brakes the first choice of many bus fleet operators is the Rotary Air Compressor. This compressor utilizes the rotary principle and provides a smooth flow of compressed air at all times even under the most severe "stop and go" braking conditions.



Wagner Electric Corporation
6461 PLYMOUTH AVENUE • ST. LOUIS 14, MO., U. S. A.
(Branches in Principal Cities and in Canada)

LOCKHEED HYDRAULIC BRAKE PARTS and FLUID . . . NoRol . . . CoMoX BRAKE LINING . . . AIR BRAKES . . . TACHOGRAPHS . . . ELECTRIC MOTORS . . . TRANSFORMERS . . . INDUSTRIAL BRAKES

K51-20

CAMPBELL *Lug-Reinforced* TIRE CHAINS

...for maximum safety... minimum operating cost

Only Campbell Chains have the patented *Lug-Reinforced* construction that means greater traction on ice and snow . . . greater traction that provides maximum protection against skids and side-slips.

What's more, the *extra* metal in the lugs means that Campbell Chains wear longer and cut link-breakage to a minimum . . . mean lowest operating cost per mile on icy or snow-covered roads.

CAMPBELL CHAIN *Company*

Main Office—York, Pa.

Factories—York, Pa., and West Burlington, Iowa

CAMPBELL TRUCK AND BUS CHAINS ARE EASY TO IDENTIFY!

Mud Service Single Pneumatic | Highway Service Dual Pneumatic | Lug-Reinforced Dual-Triple | Lug-Reinforced Interchangeable Cross Chains

Campbell color-coded bags save time in handling chains and make chain storage much easier. Available in three grades for all cars, trucks and buses: *Lug-Reinforced* for greatest traction and longest wear; *Highway Service* for regular use; *Mud Service* for off-the-road duty.

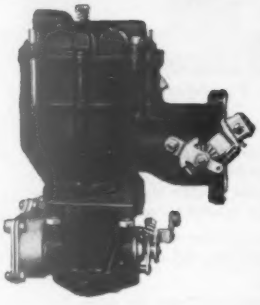
Campbell *Lug-Reinforced* Tire Chains for fleet passenger car service are packed in sturdy boxes, and every box includes the easy-to-use Chain Applier.

Make sure you have a set of Campbell Tire Chains for every unit in your fleet!

Does He Knock or Boost Your Bus?

IT ALL DEPENDS ON PERFORMANCE and PERFORMANCE DEPENDS ON

Zenith CARBURETORS



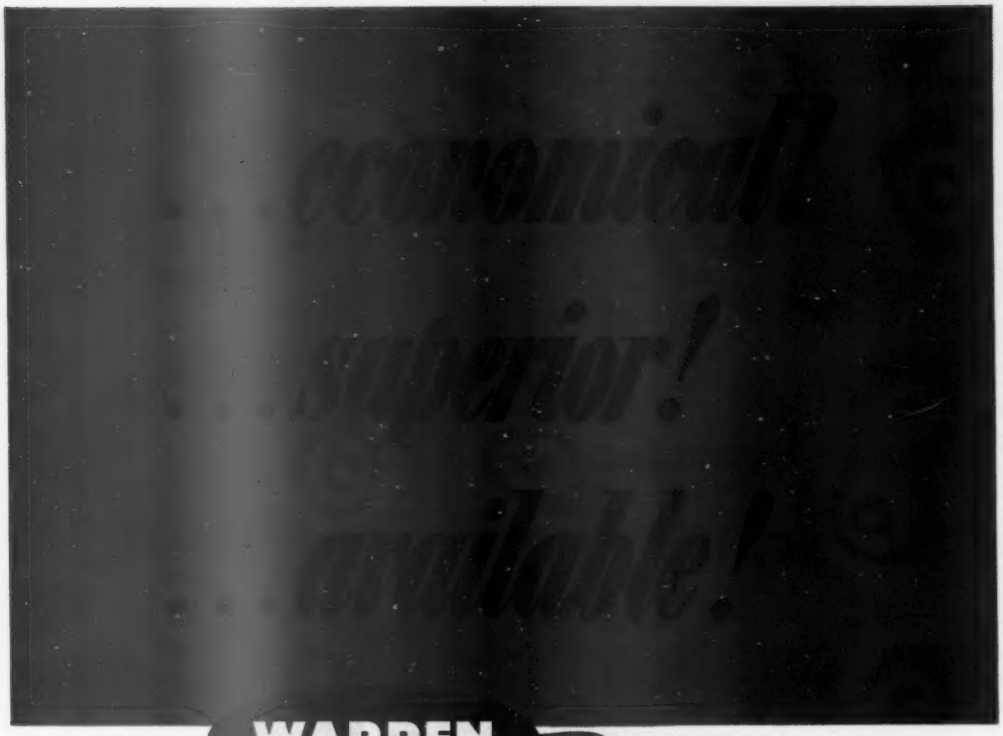
What bus drivers say about your vehicles has a mighty important bearing on the future of your business. So it is imperative that every component be selected on the basis of its contribution to lasting, satisfactory performance. In the field of heavy duty carburetion Zenith* has long been recognized as the engineer's choice for quality performance under all operating conditions. Manufacturers whose vehicles are Zenith equipped measure carburetor costs in lasting terms rather than initial expense. Zenith's rugged construction, strong idling, freedom from stalling and obedient response to every power demand goes a long way toward building owner good will. That's why cost conscious bus operators and experienced drivers prefer Zenith equipped vehicles.

*REG. U.S. PAT. OFF.

ZENITH CARBURETOR DIVISION OF Bendix AVIATION CORPORATION

696 Hart Avenue • Detroit 14, Michigan

Export Sales: Bendix International Division, 72 Fifth Avenue, New York 11, N. Y.



WARREN *Propane*
MOTOR FUEL

Warren LP-Gas fuel for buses is [redacted] because its high octane delivers more power at lower cost, prolongs engine life, reduces maintenance . . . Warren LP-Gas fuel is [redacted] because it burns smooth and clean, without offensive odors . . . Warren LP-Gas fuel is [redacted] because Warren has the production facilities to **make** it in volume . . . the transportation facilities to get it there **when** needed . . . and, the storage facilities to have it on hand **WHEN YOU NEED IT!**

TO BE SURE *Specify*
WARREN

SALES OFFICES:
FORT WORTH, TEXAS • HOUSTON, TEXAS • LOUISVILLE, KENTUCKY • MADISON, WISCONSIN • MIDLAND, TEXAS • MOBILE, ALABAMA • MT. VERNON, ILLINOIS • OMAHA, NEBRASKA • NEW YORK, NEW YORK

SELF-CONTROL STARTS HERE

AND TO RESTORE
ENGINE PERFORMANCE

OIL-CONTROL STARTS HERE

To stop oil-pumping, replace worn engine bearings

A roving eye can lead to trouble—so can worn engine bearings!

Worn connecting rod and main bearings cause oil pumping. Excess oil reaches combustion chambers, burns to performance-stealing carbon on spark plugs, valves, pistons and rings.

Worn bearings are a *major cause* of oil pumping! Give new piston rings a chance to do their own job—replace worn bearings at the same time. Use Genuine Federal-Mogul Bearings, *engineered* for the job of oil-control. They restore engine performance and owner satisfaction!

FEDERAL-MOGUL SERVICE
(Division of Federal-Mogul Corporation)
DETROIT 13, MICHIGAN

control oil-pumping where it starts—REPLACE WITH

FEDERAL-MOGUL

OIL CONTROL

BEARINGS

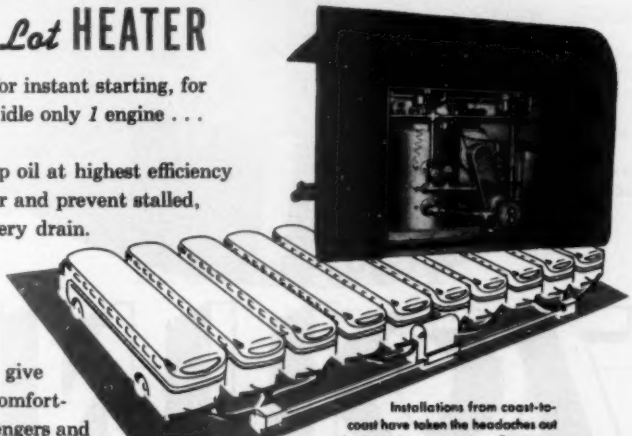
No matter how freezing cold the weather may be,

one VAPOR *Parking Lot* HEATER

will keep *10* buses warmed-up ready for instant starting, for the same amount of money it costs to idle only *1* engine . . . that's SAVING MONEY.

Vapor Parking Lot Heater will keep oil at highest efficiency to protect against engine wear-and-tear and prevent stalled, out-of-business buses. Eliminates battery drain. No need for high cost shelter buildings or garages when buses are protected by Vapor Parking Lot Heaters . . . that's SAVING MONEY.

Buses will start on schedule and give drivers and passengers a warmer, more comfortable trip, which will attract more passengers and build revenue . . . that's MAKING MONEY.



Installations from coast-to-coast have taken the headaches out of winter bus operation. For more information, write for Bulletin No. 553.

VAPOR HEATING CORPORATION 80 EAST JACKSON BOULEVARD, CHICAGO 4, ILLINOIS

Serving Transportation Industry thru branch offices in New York • St. Paul • Denver • St. Louis • Portland • Washington • Philadelphia • San Francisco • Jacksonville • Richmond • Houston • Montreal • Los Angeles

Used and Recommended by over 70% of all Truck and Bus Manufacturers

LOWEST MAINTENANCE COST

HIGHEST PERFORMANCE

REPLACE WITH ZOLLNER

THE "ENGINEER APPROVED" PISTON

You are safe and sure when you follow the recommendation of your engine designers. Specifically tailored to individual engine specifications, Zollner Pistons are the expert product of hand-in-hand engineering development with engine builders. You get utmost performance and economy of operation when you recondition with Zollner "Engineer Approved" Pistons. Today, as for many years, over 70% of all makes of trucks and buses are Zollner equipped. Like the vast majority of fleet owners, your experience records will prove Zollner is always the "best buy" in pistons — the choice of automotive engineers.

ZOLLNER

HEAVY DUTY PISTON EQUIPMENT

ORIGINAL EQUIPMENT IN AMERICA'S FINEST MOTORS

ZOLLNER MACHINE WORKS FORT WAYNE, INDIANA

Are you buying brand-new old-fashioned buses?

The gentlemen above are voting to do just that.

To be sure, they *think* they have included all the modern equipment that would keep passengers satisfied—and riding their lines.

But from simple force of habit they have okayed ordinary on-off temperature controls for the heating system, when for very little additional money they could have specified Honeywell's Moduflow Temperature Control System.

Unlike conventional systems, Moduflow provides a *continuous* flow of heat, supplied in the right proportion. And it provides *continuous* air circulation that distributes the heat evenly.

Thus Moduflow eliminates *all* the too-familiar sources of passenger discomfort.

That's why with Moduflow you can protect your revenue by providing the kind of comfort more and more of your riders are demanding from you every day.

A simple, sure, *air*-operated system, Moduflow is economical to maintain—offers so many other advantages that buses without it can honestly be called *old-fashioned!*

For complete information on Honeywell Moduflow, call your local Honeywell office or mail the coupon below today.

MINNEAPOLIS
Honeywell
First in Controls

MINNEAPOLIS-HONEYWELL REGULATOR CO.
Minneapolis 8, Minnesota, Dept. BT-8-35

Gentlemen:

Please send me complete information on your Moduflow System for buses.

Name_____

Firm Name_____

Address_____

City_____ Zone_____ State_____

MAINTAIN TIGHT SCHEDULES SAFELY... SILENTLY

GUNITE

HEAT-TREATED HEAVY-RIBBED

BUS BRAKE DRUMS

Immediately Available from Your Distributor

GUNITE FOUNDRIES CORPORATION

Established in 1854
Rockford, Illinois

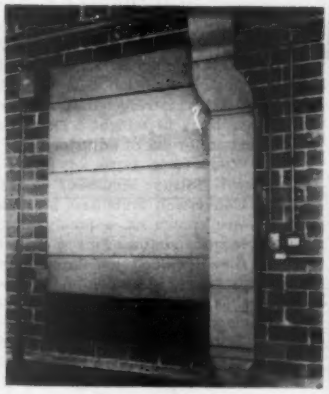
Designers and manufacturers of brake drums for more than twenty years

Gunite Heat-Treated Brake Drums have been in *special* service for years. They have established almost unbelievable records of increased brake drum and lining life. Now Gunite Heat-Treated Brake Drums are available for *your* buses. Prove their superiority in your own operation by installing a set on all four wheels of one bus. Exceptional rigidity of the Gunite Brake Drum helps solve many noise problems. Ask your Gunite Distributor about Gunite Heat-Treated Brake Drums. He can help you lower your operating cost . . . help solve your brake drum problems.

WHAT'S NEW

NEW PRODUCTS FOR THE INDUSTRY

AIR DISCHARGE OPENINGS in three of five zones are at floor level. Damper arrangements in overhead equipment rooms enable delivery of blended fresh and recirculated air or 100 per cent fresh air.



CLOSEUP OF EXHAUST INTAKE with the MSA CO Alarm mounted at the left above the floor. Air is continuously sampled and tested by this instrument. Manual control for the fan is at right.

MASTER VENTILATING CONTROL and indicating panel which is under 24-hour observation. Lights on panel show functioning of dampers, fans and CO Alarms in each of four zones.

MSA Carbon Monoxide Alarms Give Worker Protection Without Constant Ventilation

● THE CARBON MONOXIDE ALARMS, developed by the **Mine Safety Appliances Company, Pittsburgh,** are said to be among the most sensitive of the controls used to protect garage workmen against carbon monoxide fumes.

These instruments continuously sample and test the atmosphere in return air ducts. If the concentration of carbon monoxide exceeds two parts in 10,000 (.02 per cent), the system automatically switches to ventilating position.

These MSA alarms are used in four new bus garages of New York City's Transit System as a part of the protection program against carbon monoxide fumes.

In two of the garages using MSA alarms, the heating and ventilating systems are integral. Supply and exhaust fans and steam heating coils are installed in two sheet metal equipment houses in the roof trusses of the garages, with ductwork transporting fresh and recirculated air.

In one garage the area is divided into five zones, each served by an independent heating-ventilating system. One zone is the fuel dispensing area, cut off from the rest of the building by fire walls and automatic fire doors. This area is supplied with 100 per cent fresh air continuously.

The other four zones are arranged to receive 10 to 15 per cent fresh makeup air at all times. Through a program clock program, the systems automatically change from partial recirculation to 100 per cent fresh air once every hour for about 10 minutes. In addition, during peak traffic hours, these systems again operate on 100 per cent fresh air. MSA alarms continuously sample the atmosphere.

Puller

A Slide Hammer Puller has been announced by **HERBRAND TOOLS, Fremont, Ohio.** It may be quickly adapted to either inside or outside pulling jobs. External capacities are from 0" to 5" and internal gripping is from 1¼" to 6". Special push-pull holding pins make it easy to change jaws from inside to outside pulling position, it is stated.

Interchangeable puller jaws, special external action expansion head and a no-pinch, safe, slide hammer are features claimed for this new tool.

DeLuxe Filter Catalog

A new 52-page catalog, released by **DeLuxe Products Corporation, LaPorte, Ind.,** contains complete information and illustrations of DeLuxe Oil Filters, Replacement Cartridges, and new removable Sedisumps for all motor vehicle, power unit and marine engines.

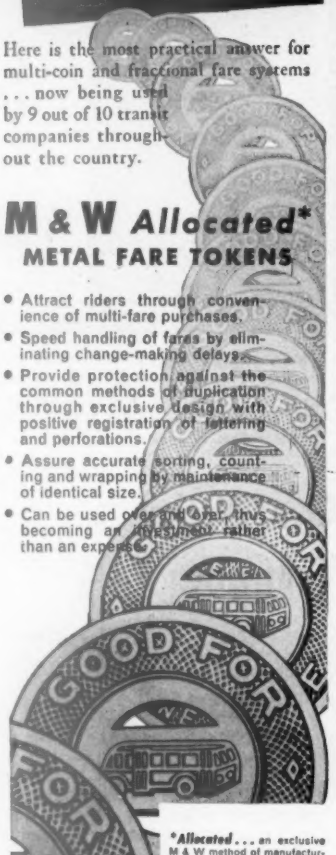
Of special interest is the new sec-

How to
ATTRACT RIDERS
and
PROTECT REVENUE

Here is the most practical answer for multi-coin and fractional fare systems . . . now being used by 9 out of 10 transit companies throughout the country.

M & W *Allocated
METAL FARE TOKENS**

- Attract riders through convenience of multi-fare purchases.
- Speed handling of fares by eliminating change-making delays.
- Provide protection against the common methods of duplication through exclusive design with positive registration of lettering and perforations.
- Assure accurate sorting, counting and wrapping by maintenance of identical size.
- Can be used over and over, thus becoming an investment rather than an expense.



*Allocated . . . an exclusive M & W method of manufacturing metal fare tokens individually designed for each customer. The perforations and the lettering are in the same relative aligned position on each and every token which makes them identical, preventing duplication.

Write for details and quotation.

Established 1854
Meyer & Wenthe
Incorporated

TRANSPORTATION M&W DIVISION

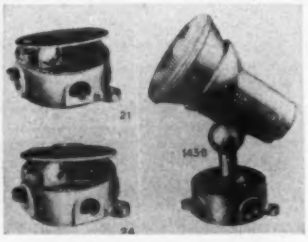
30 S. Jefferson St., Chicago 6, Ill.

WHAT'S NEW . . . *continued*

tion on "Cartridge Diagnosis," which illustrates typical used cartridges, points out the "symptoms" shown by each and the "diagnosis" that reveals faulty engine condition. One example shown is a cartridge that appears "mushy, light in weight." Diagnosis is: "carburetor out of adjustment."

The four basic types of filters—Universal "Strap Mounted," Base-Type, Conversion units and Multiple units—are shown on a handy chart with recommendations for use of each type. Also included are installation instructions and operation of the new removable Sedisumps which make sump cleaning unnecessary.

A "Filter Specification Section" gives recommendations for the selection of filters and cartridges for all makes and models of engines, gasoline and diesel. To simplify selection and ordering of service parts and filter kits, a special section is included, describing and illustrating the individual parts. A free copy of the catalog may be obtained by writing the company.



Junction Boxes

Heavy-duty weatherproof junction boxes made of non-corrosive cast aluminum are announced by the **STONE MANUFACTURING COMPANY, Elizabeth 4, New Jersey,** and include a variety of covers and fittings for universal use on almost any outdoor wiring or lighting job. The box itself has four hubs tapped ½" IPS, is provided with or without mounting lugs, has a flat aluminum cover plate sealed with a heavy cork gasket and a separate cast aluminum cover tapped ½" IPS to take standard lamps holders for the 150-watt, 200-watt and 300-watt outdoor weatherproof reflector bulbs now available as standard stock from all major lamp bulb manufacturers.

Used with lamp holders as illustrated, and mounted on walls where buildings form boundary lines, the unit is reported especially effective for property-line lighting, for protective floodlighting of areas between buildings, for yard lighting and areas where pilfering, sabotage and trespassing are best discouraged by an encircling wall of protective light. All units fully UL-approved.

Cleaner Features New Vibrating Air Valve

Bus maintenance men may be interested in a new cleaner being produced by **Patterson Products' Vibro-Pneumatic Cleaner Division, 518 Maccabees Bldg., Detroit 2.** The cleaner features a patented vibrating air valve that creates by the jet principle an agitating suction, which forces dirt and metal particles into a container.

The dirt container is supported on the back by a conventional belt and harness assembly and is encircled in a fabric shield.

By operating a second of two finger-tip controls, a vibrating external air jet is created. This jet is directed forward through an orifice in the cleaner head to dislodge dirt and metal particles from inaccessible places to spots where they can be picked up by instantly changing to a suction action.

Air consumption is reduced to a minimum because of the vibrating valve action that sharply cuts off air supply 2,000 times per minute. The cleaner head is of polished aluminum and the wands are lightweight tubing. No oil is required since oil-impreg-

nated powered metal parts have been provided.

It is said to be more efficient than conventional steady suction types because the agitating suction action dislodges and collects dirt and metal particles that steady suction will not pick up. It is reportedly safe since no electrical components, which might create fire hazards, are used. It operates from any 80 p.s.i. and up compressed air force.

Standard nozzle width of five, eight and 10 in. can be had. Special designs will be made to suit customer requirements. Total weight of the Pick-A-Back unit is seven and a half pounds.

Waterproof Abrasive Paper

A waterproof abrasive paper was announced recently by **THE CARBORUNDUM COMPANY, Niagara Falls, New York.**

A new process of manufacture permits an extremely soft flexible backing which withstands severe manipulation and gives greater conformation when applied to contours, it is stated. The combination of sharpcutting Carborundum silicon carbide grain with the cushioning effect of the resilient backing results in an excellent uniform finish.

With the highest degree of adhesion of abrasive to backing ever achieved, Redicut by Carborundum provides an unusual resistance to pulping and peeling. Its rapid rate of cut is maintained over a much longer service life than that obtained with waterproof papers previously available.

Drill Grinding Attachment

A drill grinding attachment No. 1296 for sharpening steel drills of any size from ⅛-inch to ⅝-inch, using a standard tool grinder, has been announced by **The Power Tool Division, ROCKWELL MANUFACTURING COMPANY, Milwaukee 1, Wis.** A necessity for the inexperienced operator who could not otherwise expect to sharpen a drill accurately, this device is a time saver in the hand of an expert mechanic. It is simple to operate and it produces correctly ground 2, 3, or 4 lip drills.

As assembled at the factory, the drill grinding attachment is arranged to produce the standard 118° lip angle with 12 to 15 degree heel or clearance angle. It is easy to adjust for other lip angles and other clearance angles if so desired.

Micrometer adjustments are provided. Split shafts are used to provide rigidity in any position. All points of the unit can be adjusted for wear.

Continued on page 124

LIKE THE TROJAN HORSE . . . IT'S STRENGTH LIES WITHIN
AIR-PUSH
CHALLENGER
WINDSHIELD WIPER MOTOR
The strength of the wiper motor you use is a mighty important factor for guaranteeing constant, clear vision. From the outside you can't see the revolutionary new features that make the Air-Push CHALLENGER the most powerful windshield wiper motor on the market today. Inside the modern aluminum casting of this compact motor you will find only four moving parts. Nothing else moves—nothing else wears . . . reducing maintenance costs to a minimum. Write for a FREE copy of the Fleet Replacement Plan TODAY!
Sprague DEVICES, INC.
Michigan City, Indiana

WHAT'S NEW

Continued from page 123

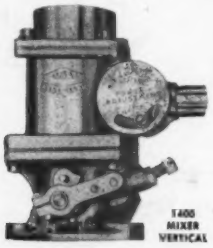
Lathe Book

The 50th edition of "How to Run A Lathe" has been announced by the **SOUTH BEND LATHE WORKS, South Bend 22, Ind.** The current edition is 128 pages and contains over 350 illustrations. There are eleven chapters clearly written in nontechnical language making it easy for the beginner to understand. The texts covers such items as the correct installation and leveling of the lathe, grinding cutter bits, turning, boring, thread cutting, taper turning, drilling, reaming, tapping, machinability ratings and cutting speeds for various kinds of steels; standard tolerances for press fits, running fits, push fits, and sliding fits; allowances for finish turning, filing, polishing, grinding, reaming, lapping and honing; and tooling dimensions for South Bend Lathes.

It is available in paper binding at 25c or in imitation leather fabrikoid binding at $1.00 a copy postpaid through South Bend.

ALGAS BUTANE-PROPANE
CARBURETION CONVERSION EQUIPMENT

Brings More *Low Cost* Motor Power



PRECISION ENGINEERING MARKS ALGAS EQUIPMENT AS BEST IN THE FIELD

ALGAS equipment brings you all the advantages of LP-Gas operation plus many extra engineering advancements that put it far ahead in operation, economy and durability.

ALGAS equipment is engineered to meet the exact specifications of each kind of engine, to assure maximum efficiency of operation.

ALGAS equipment on your engines means more LOW COST motor power... longer engine life and greater time between motor overhauls.

Pioneers in the Butane-Propane field, American Liquid Gas Corporation offer a background of over 18 years experience. This is your assurance that the ALGAS equipment you buy will be correctly engineered for your job. Write today for further information.

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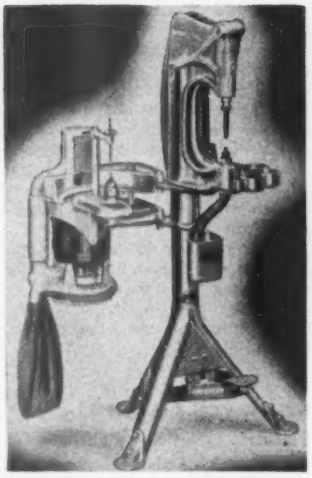
Los Angeles 21, California



Brake Lining and Grinding Machine

The Thomason Model 105 brake lining and grinding machine is said to supply the need for a machine that easily handles large sizes of solid copper rivets used on many heavy duty buses and trucks. It is designed especially for use where 1¾ plunger travel is required to accommodate heavy truckshoes with deep webs.

The patented arc method of grinding as incorporated on the Model 105 is a method of grinding shoes by means of a series of interchangeable fine-precision arcs, which conform with various drum diameters. With proper setting of shoes, it also eliminates squeaking, scoring of drums, and many other difficulties, it is said.

The Thomason Multi-Power Unit, also incorporated on the Model 105, is said to be an exceptionally efficient and ingenious device that provides the tremendously powerful and fast stroke of the rivet plunger, enabling the machine easily to upset and head solid copper rivets. This product is made by **Shepard-Thomason Co., 2023 West Gage Ave., Los Angeles 347, Calif.**

Vibration Mount Bulletin

Assurance of accuracy and portability of machine tools, flexibility of plant operation, and reduction of building and machinery maintenance costs are described in a bulletin published by the **BARRY CORPORATION, 700-H Pleasant St., Watertown, Mass.** Numerous photographs illustrate the application of BARRY-MOUNTS to machinery installations where vibration isolation is essential for maximum operating efficiency.

Continued on page 127

Keeps Upkeep Down!

YOUR maintenance costs all but drop out of sight!—when your bus seats are upholstered in Lumite fabric. Dirt, dust, grime, and almost *any* kind of mess, vanish pronto with water, plain or soapy, or cleaning fluid. So if you want low upkeep and lasting good looks, look into Lumite fabric!

LUMITE* woven SARAN fabric

Tough! Scuff-resistant. Can't rot or mildew and it's non-inflammable.

Comfortable! The weave "breathes"—lets air circulate freely. Assures year around seating comfort—cool in summer, never clammy in winter.

Stays Trim! Is easy to fold, shape and cut. Keeps its glove-snug fit—won't sag, stretch, wrinkle or "cup" when properly fitted and installed.

Less Maintenance! Lumite fabric is unaffected by all ordinary stains. Clean it with a cloth or brush dampened with soapy water or cleaning fluid.

*Registered Trade-mark

Here's how to find out more!

For FREE fabric sample and descriptive literature, write—Dept. BT-41,

LUMITE DIVISION
Chicopee Mfg. Corp. of Georgia
40 Worth Street, New York 13, N. Y.

1 my pupils' pupils are important!
2 ...your passengers' pupils are important, too!
3 give them a treat with
LUMINATOR FLUORESCENT LIGHTING!

1. Every new school that is being built today, utilizing the latest equipment, is Fluorescent Lighted. That is good common sense because it protects children's eyes, makes it easier for them to read.

2. After years of research, Luminator Fluorescent Lighting is now available for your coaches. That your passengers want to read as they ride is an established fact—it is a release from boredom—makes for a more interesting ride. Good lighting is good riding.

3. Luminator Fluorescent Lighting doesn't just make it easier for your passengers to read and relax as they ride—it makes a bus look more inviting, attracts passengers, makes them want to ride again and again—that means it's revenue building!

Find out about it soon by writing Luminator, Inc., for full information.

LIGHTING ENGINEERS · DESIGNERS · MANUFACTURERS

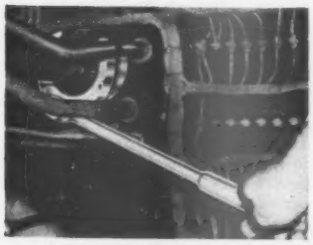
LUMINATOR Inc.

120 NORTH PEORIA ST., CHICAGO 80, ILLINOIS

IN CANADA: RAILWAY AND POWER ENGINEERING CORP.

WHAT'S NEW

Continued from page 124



TAC Presents Wrench With 64 Socket Sizes

An open end ratchet wrench, said to be the nearest approach to a true universal wrench, has been put on the market by Tubing Appliance Company, Los Angeles. Designed, patented, and produced by the company, better known as TAC, the one wrench has 64 socket sizes.

Reportedly, the wrench will efficiently do the work of an open-end wrench, crescent wrench, box wrench, socket wrench, ratchet wrench and crowfoot wrench. It can also be used with a torque handle for torque rated fittings. The makers claim that, with sockets from ⅜ in. to four in. in size, the TAC tool will do practically any wrenching job.

Secret of the wrench is said to be the open end, which allows the wrench head and socket to fit on to tubing and down on the fittings. The socket and ratchet ring revolve around the tube in tightening the fitting. When finished, the wrench is lifted from the fitting, the openings on the head and socket are aligned, and the wrench is removed.

TAC claims that the open-end wrench is not a "special" tool but a "universal" tool with more applications and efficiency than any other single wrench around. Its performance, the makers say, is a result of the open end feature plus unusually strong steel alloys in the wrench. Other helps are its full hinge, square drive, removable handle; ratchet arc as small as five degrees; extra thin wall sockets; and overall compactness of design.

Resurfacing Material

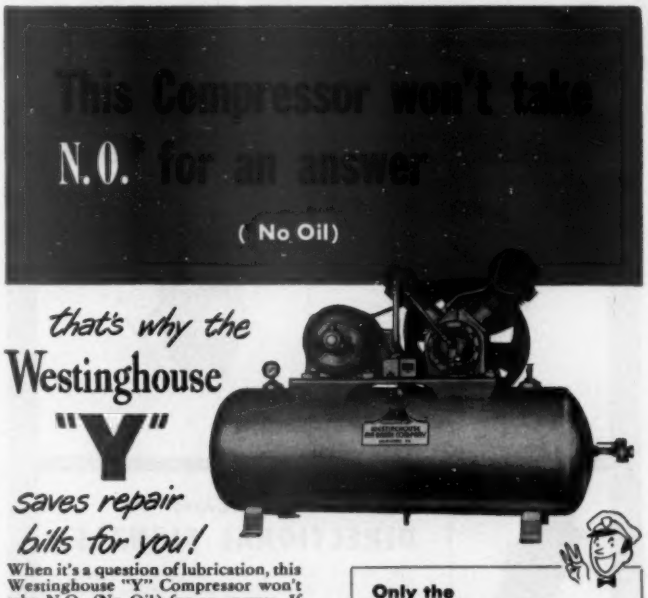
An improved type of Armor resurfacing and patching material for concrete floors is announced by **THE MONROE COMPANY, INC., Cleveland, Ohio.**

The material retains all of the original Armor features. However, because of the addition of a new, finer aggregate, it is reputed to be much more effective as an over-all floor resurfacer and to fill even the most minute cracks in concrete floors.

Armor, according to the manufacturer, is a dry cementatious type powder made up of pulverized pure-oxidizing metal grains and four different kinds of aggregate, chemicals and puzzolanic (setting agent) ingredients. The new aggregates have the approximate sum of 98% in oxide basilican, iron and aluminum. These combine to produce a surface with unusual resistance to wear, acids, oils, etc.

Unlike new concrete, Armor bonds perfectly to old concrete surfaces and provides a perfectly flush patch when used in areas of any size. Other features are imperviousness to acids, oil, grease and moisture.

Continued on page 128



When it's a question of lubrication, this Westinghouse "Y" Compressor won't take N.O. (No Oil) for an answer. If the crankcase says "No Oil" the "Y" Compressor says "No Air". It sticks to its demands, too—which is why users don't get stuck with big repair bills. In many busy garages or service stations, where compressor lubrication may be overlooked, this one feature is one of the best "life assurance" policies your compressor can have. NO OIL—NO AIR protection calls immediate attention to the oversight, which can be corrected before you have to pay expensive repair bills.

You'll find too, that the "Y" offers all the usual modern features—two stage compression, air cooled design, pressure lubrication, automatic pressure control—that mark any quality compressor, PLUS the three protection features listed at right. Finally, it's big, rugged and husky . . . designed and built to give you years of dependable service.

Only the Westinghouse "Y" gives you ALL THREE

Low Oil Level Protection—No Oil—No Air, bans wear and repair.

Thermal Overload Protection—Standard, at no extra cost, on the "Y".

Starting Unloader—Compressor remains unloaded till speed and oil flow are normal.

For extra assurance and economy, install the Westinghouse "Y" Compressor. They are available with displacements from 6.2 to 68 cfm. Motor capacities from 1½ to 15 hp.

Westinghouse Air Brake Co.

Industrial Products Division—WILMERDING, PA.
Factory Branch: EMERYVILLE, CALIFORNIA

ASK FOR BULLETIN IDC 9302-3.

DISTRIBUTORS THROUGHOUT THE UNITED STATES . . . CONSULT YOUR CLASSIFIED DIRECTORY
DISTRIBUTOR IN CANADA: CANADIAN WESTINGHOUSE CO., LTD., HAMILTON, ONTARIO

WHAT'S NEW

Continued from page 127

Identification Device Booklet

A four-color, double-fold brochure, describing Metal-Cals, a new permanent identification device, is now available on written request to the manufacturer, the **C & H SUPPLY COMPANY, METAL-CAL DIVISION, Boeing Field, Seattle, Wash.**

The brochure specifies advantages, limitations, sample usages, method of application and test reports on the product. Metal-Cals consist of a .003" thickness of aluminum foil anodized and dyed to rigid specifications. They are backed with a high tensile bonding material and can be applied quickly to any smooth, cohesive surface on metals, porcelain, bakelite, polysterene, glass, wood, paints, or enamels.

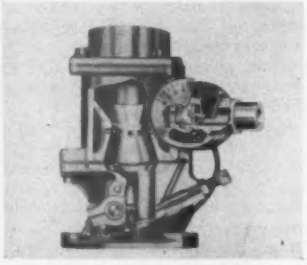
Metal-Cals are claimed by the manufacturer to be superior to both decals and nameplates as a permanent method of applying trade names, trade marks, insignia, numbers, specifications, etc.

Solvent Detergents Booklet

How solvent detergents provide outstanding benefits in hundreds of industrial cleaning applications is discussed in a 24-page illustrated booklet recently issued by **OAKITE PRODUCTS, INC., 22 Thames St., N.Y. 6, N.Y.,** manufacturers of specialized cleaning and related materials.

Booklet reports upon the many classifications of cleaning in which solvent detergents are being successfully used today to perform such typical tasks, for example, as: removing oily films, smuts, cutting, removing carbonized oil and grease deposits encountered in the repair and maintenance of transportation facilities, to make cleaning more practical by precleaning to remove extra-heavy deposits in a preliminary operation, especially applicable where metal parts are thickly coated with oils, grease and solid-particle soils; and to provide temporary rust protection to metal surfaces after cleaning.

Model N107
Model N109
Model N260
New Arrow Class "A"
DIRECTIONAL SIGNALS
The Arrow Class "A" Directional Signals shown above have 4-inch amber sealed-beam units. Baked-on black enamel finish. Available for 6 or 12 volt systems. Model N107 can be mounted on the fender or on the rear of truck or tractor. Model N109 has a recessed body for flush mounting.
See your jobber salesman today for Arrow Directional Signals and the complete line of Arrow *Safety After Dark* Equipment.
A good signal deserves a good switch. Arrow's N260 is the finest on the market! Built-in flasher, built-in fuse protection, positive proof indication that lights as well as switch are functioning. Unconditionally guaranteed!
Here's a Complete Class "A" Kit
Arrow Kit No. 12 gives you everything you need for the latest approved protection. 2 N107 signals, 2 N109 signals, 1 N260 switch.
safety after dark
ARROW
Arrow Safety Device Company
Mount Holly, New Jersey



Algas L-P Carburetor Has Many Applications

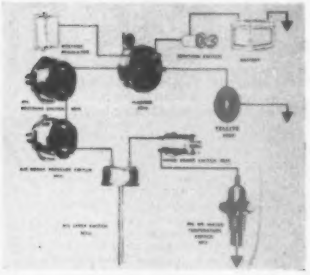
A newly designed 1,400 series carburetor for bus, truck, and automobile engines, is announced by **American Liquid Gas Corporation, Los Angeles 21, Calif.** The new unit provides a much wider range of applications than anything heretofore available, it is said. It has a removable airhorn which eliminates the necessity of changing the air cleaner to fit the carburetor.

Most LP-Gas carburetors in the past have been designed with the mixer and airhorn all made in one assembly. This meant that in many installations it created a considerable problem in adapting carburetors to every size air cleaner.

The old style Algas 1,400 series carburetor was a two-piece assembly, namely the throttle-box and the mixer—airhorn assembly. The new model is a three part unit. The lower portion is the throttle box and includes the throttle and idling system. The center assembly is the mixer, including the venturi, main jet and economizer. Upper portion is the airhorn, either a straight or Donaldson type. The new

unit may be used for either vertical or horizontal installations. For horizontal use, a conventional elbow is installed between the mixer and the airhorn.

Another feature is that the mixer may be rotated into any one of four positions on the throttle box assembly. The new design greatly simplifies installation because it is available in a wide range of manifold flange sizes to fit any engine. In designing the 1,400 series carburetor, Algas engineers have considered all types of applications for which it will be used and have provided a factory engineered model to fit each installation requirement.

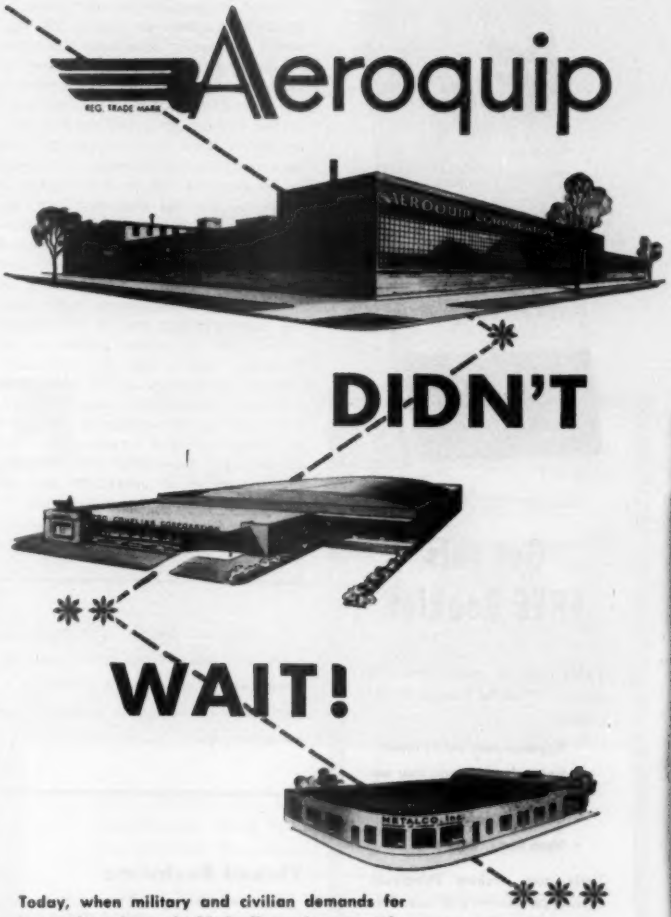


Warning Signal Aids Driver

A flashing light signal, to warn the driver of a vehicle of any malfunction which might result in damage to engine parts, is announced by **Rochester Mfg. Co., Rochester 10, N.Y.** Tellite, as the device is known, is a patented, remote indicating, warning system, showing low oil pressure, low air brake pressure, excessive heat rise, generator failure or a partial set of hand brake. Similarly it may be used industrially to indicate abnormally high or low temperature pressure, or electrical current.

Tellite gives three indications: "light off" — "dim light" — and "flashing light." A dim, visible light glows when all connected units are operating normally. It remains dim when the engine idles. A temperature rise, low oil or air pressure, or any other such condition which may make further engine operation unsafe or detrimental, causes Tellite to flash the warning: "bright" — "dim bright" — and "dim." Thus the operator is always warned before serious damage is done.

Any number of pressure and temperature control switches may be used in this warning circuit without affecting its operation. One warning light may be used for checking a large



Today, when military and civilian demands for its products have doubled all previous records, Aeroquip announces the completion of a sizable expansion program. Two new structures and the acquisition of a new subsidiary have added more than 100,000 sq. ft. of highly productive space to Aeroquip's plant facilities.

It is not through mere chance that these important new additions are in operation today. More than a year ago the first warning signs that led to rearmament were recognized. Then, Aeroquip didn't wait for government prodding or financing, but with private capital and typical American initiative began a project which assures greatly increased production of vital Aeroquip products TODAY . . . when they are of utmost importance.

**In Jackson, Michigan, there is a new 65,000 sq. ft. addition to the Aeroquip main plant.*

***In Burbank, California, this modern 30,000 sq. ft. plant has just been completed.*

****Metalco, Inc., a new Aeroquip subsidiary, operates this plant in Cheboygan, Michigan.*

AEROQUIP CORPORATION

JACKSON, MICHIGAN

FLEXIBLE HOSE LINES • DETACHABLE, REUSABLE FITTINGS • SELF-SEALING COUPLINGS • BREAKAWAY COUPLINGS • HYDRAULISCOPE

Get this FREE Booklet

Tells how to save time and money by using Oakite Penetrant to

- Degrease parts before repair
- Steam-clean chassis, rear engines, underparts
- Clean cooling systems
- Wash floors, work pits

Tells how Oakite Penetrant quickly penetrates and dissolves oil, grease, road sludge, sediment, etc. Effective in either tank or steam-cleaning. Used in water-mixed solutions—never a fire hazard.

Booklet sent on request. Ask your local Oakite Technical Service Representative. Or write Oakite Products, Inc., 16C Thames St., New York 6, N.Y.

Technical Service Representatives Located in Principal Cities of United States and Canada

SPECIALIZED INDUSTRIAL CLEANING

OAKITE

MATERIALS • METHODS • SERVICE

number of temperature and pressure points throughout an engine. The operator can easily determine the cause of flashing by checking his engine instruments. If preferred, however, one can be used for each separate part of the engine, as is the normal procedure on diesel locomotives, etc. Thus on a complete installation, there may be as many as five or more lights to warn of low oil pressure, low air brake pressure, abnormal temperature, generator or other electrical failures, a partial set of the hand brake, etc. Normally these would be mounted on the instrument panel over the corresponding instruments. Some users may, of course, prefer to use Tellite in such a way as to eliminate engine instruments, as has been done by some automotive manufacturers. This has the advantage of giving a positive warning of an abnormal condition, a full knowledge that the testing system is in operation, and an extremely inexpensive installation.

The 1951 BUS SHOW IN PRINT in the September issue will feature the latest developments in motor buses, trolley buses, seats, heating and lighting equipment and bus accessories.

Thread Restorers

A set of 8 sizes of Thread Restorers has been announced by **HERBRAND TOOLS of Fremont, Ohio.**

It is claimed that these new dies restore threads quickly on any battered, damaged or rusted bolt, stud or shaft.

Just run on and off and thread is restored. Each die is the same size as the matching nut. No special holder or tool is required. It uses a regular wrench or socket.

Panel Cutter

One of the tools included in the new Air-Quick Tool Sets now being manufactured by the **MARFLOW DIVISION of STEELCRAFTERS COMPANY, 8064 Clayton Road, St. Louis, Mo.,** is the Panel Cutter. The most widely used of all the 19 tools manufactured by this company, the Panel

Continued on page 132

Budd Wheel Distributors provide the same service described in this advertisement

AKRON—Motor Rim Manufacturers Co.
ALBANY—Wheels, Incorporated
ALBUQUERQUE—Wheels & Brakes, Inc.
ATLANTA—Harris Automotive Service, Inc.
BALTIMORE—R. W. Norris & Sons, Inc.
BIRMINGHAM—Wheel, Rim & Parts Co.
BOSTON—New England Wheel & Rim Co
BUFFALO—Frey, the Wheelman, Inc.
CHARLOTTE—Carolina Rim & Wheel Co.
CHATTANOOGA—Harris Automotive Service, Inc.
CHICAGO—Stone Wheel, Inc.
CINCINNATI—Rim & Wheel Service, Inc.
CLEVELAND—Motor Rim Manufacturers Co.
COLUMBUS—Hayes Wheel & Spring Service
DALLAS—Southwest Wheel, Inc.
DAVENPORT—Stone Wheel, Inc.
DAYTON—Rim & Wheel Service, Inc.
DENVER—Quinn & McGill Motor Supply Co.
DES MOINES—Des Moines Wheel & Rim Co.
DETROIT—H. & H. Wheel Service, Inc.
EVANSVILLE—Auto Wheel & Rim Service Co., Inc.
FARGO—Wheel Service Company
FORT WAYNE—Wheel & Rim Sales Co.
GRAND RAPIDS—Rim & Wheel Service Co.
HARRISBURG—Standard Wheel & Rim Co.
HARTFORD—Connecticut Wheel & Rim Co.
HOUSTON—Southwest Wheel & Equipment
INDIANAPOLIS—Indiana Wheel & Rim Co.
JACKSONVILLE—Southeast Wheel & Rim Co.
KANSAS CITY—Borbein, Young & Co.
KNOXVILLE—Harris Automotive Service, Inc.
LOS ANGELES—Wheel Industries, Inc.
LOUISVILLE—Auto Wheel & Rim Service
MEMPHIS—Beller Wheel, Brake & Supply Co.
MILWAUKEE—Stone Manufacturing Co.
MOLINE—Mutual Wheel Co.
NASHVILLE—Beller Wheel, Brake & Supply Co.
NEWARK—Automotive Safety Inc.
NEW HAVEN—Connecticut Wheel & Rim Co.
NEW ORLEANS—Southern Wheel & Rim Co.
NEW YORK—Wheels, Incorporated
OKLAHOMA CITY—Southwest Wheel, Inc.
OMAHA—Morgan Wheel & Equipment Co., Inc.
PEORIA—Peoria Wheel & Rim Co.
PHILADELPHIA—Thomas Wheel & Rim Company
PITTSBURGH—Wheel & Rim Sales Co.
PORTLAND—Six Robbiees', Inc.
PROVIDENCE—New England Wheel & Rim Company
RALEIGH—Carolina Rim & Wheel Co.
RICHMOND—Dixie Wheel Co., Inc.
ROCHESTER—Frey, the Wheelman, Inc.
SALT LAKE CITY—Henderson Rim & Wheel Service
SAN ANTONIO—Southwest Wheel & Equipment
SAN FRANCISCO—Wheel Industries, Inc.
SEATTLE—Six Robbiees', Inc.
SOUTH BEND—Wire & Disc Wheel Sales & Service
SPOKANE—Bearing & Rim Supply Co.
SPRINGFIELD, ILL.—Illinois Wheel & Brake Co.
SPRINGFIELD, MO.—Borbein, Young & Co.
ST. LOUIS—Borbein, Young & Co.
ST. PAUL—Wheel Service Co.
SYRACUSE—Colbourn Wheel & Rim Service, Inc.
TACOMA—Six Robbiees', Inc.
TOLEDO—Wheel & Rim Sales Co.
WICHITA—Borbein, Young & Co.

EXPORT

CLEVELAND—C. O. Brandes, Inc.

CANADA

CALGARY—Fisk Tire Service Ltd.
EDMONTON—Alberta Wheel Distributors, Ltd.
MONTREAL—General Automobile Equipment Ltd.
TORONTO—Wheel & Rim Co. of Canada, Ltd.
VANCOUVER—Wheels & Equipment, Ltd.
WINNIPEG—Ft. Garry Tire Service Ltd.

Rx for a headache

Even Hadacol gets headaches. This one was in the maintenance of its fleet of 115 units. In their operation through 36 states it seems they were suffering from a constant breakdown of wheels.

Frank Powell, sales representative of Southern Wheel & Rim Service, New Orleans distributor for Budd wheels, was asked to analyze the problem. Upon his recommendation the tractor-trailer units were changed over to 10.00 x 20 tires mounted on Budd wide base wheels and the 1½-ton trucks to 9.00 x 20 tires mounted on Budd wide base wheels. The trouble has cleared up, says Hadacol.

If you are having wheel trouble these days . . . or if you're not getting the mileage you would like from your tires . . . perhaps your own Budd distributor has the answer. Why not call him—a free survey of your equipment is for the asking.

The Budd Company, Detroit 14

GENUINE

Budd

COLD TAPERED DISC

WHEEL

TOLEDO MEANS *PROFIT* FOR YOU!

YOUR TOLEDO JOBBER HAS THE INDUSTRY'S BEST JOBBER SERVICE FOR YOU!

1 **Complete Line—Genuine Toledo Motor and Chassis Parts (For All Car Models and Makes—For All Trucks, Busses and Tractors)**

2 **Machine Shop Service**

3 **Technical Service**

Under one roof you get the World's Finest Toledo Motor and Chassis Parts . . . You get complete service on all automotive supplies, equipment, paints . . . You get complete precision machine shop facilities . . . You get technical service to help solve any automotive problem—to your profit. See your Toledo jobber today!

Toledo's complete line includes these outstanding parts: Aerotype and Sodium-Cooled Valves, Rotocaps, Chrom-a-Loy Valve Seats, U-Flex Piston Rings, CL-77 Bearings, Copper-plated Sleeves, Perma Seal Water Pumps, Dual Bearing Tie Rod Ends.

GET IT FROM YOUR JOBBER

The **TOLEDO**
STEEL PRODUCTS COMPANY
TOLEDO, OHIO
Since 1906 Makers of The World's Finest Automotive Parts

WHAT'S NEW

Continued from page 130

Cutter has proven indispensable to many body repair shops.

The Panel Cutter is designed to cut out sections, door panels, flooring, door posts, hand holes, inner construction and so forth.

No crimped edges result from the use of the Panel Cutter, it is stated. The cut is left in perfect shape for re-welding. Cutter is easily sharpened. Powered by the standard Air-Quick Pneumatic Hammer (as are all other Air-Quick tools) it is manufactured from hand forged tool steel and is guaranteed against defects.

It is now available as a supplementary tool, and is also included in both Air-Quick Tool Sets.

Cleaner-Blower

Blo-R-Vac, all-purpose tank-type cleaner for industrial and commercial establishments is announced by **IDEAL INDUSTRIES, INC., 3047 Park Ave., Sycamore, Ill.**

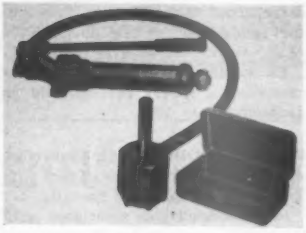
This cleaner is a 3-in-1 combination giving the operator a vacuum cleaner, water pick-up and a powerful hand-type cleaner or blower.

Used as a tank cleaner the Blo-R-Vac picks up dirt, dust and metal particles from all types of floors and is very thorough in vacuuming rugs. It quickly removes water from factory and service station floors after mopping. The powerful suction is especially valuable in scrap collection and cleaning stock shelves. When the power unit is removed from the tank, it becomes a powerful hand-type cleaner or blower. As a blower, it is extremely valuable in blowing dirt out of hard-to-get-at places. With an Ideal spraying attachment, it serves

as a smooth, even sprayer for paints, lacquer, deodorants, etc. It may also be used as a hand-type vacuum cleaner, when provided with the regular Ideal Hand-Type Vacuum Cleaning set.

Ideal Blo-R-Vac Cleaners are available in two models, Heavy Duty (1-1/3 H.P.) and Medium Duty (2/3 H.P.).

Many attachments are available for use with this cleaner.



Draw Bar

The new pump operated Draw Bar pulls ½-in. to 4-in. size holes in sheet metal, switchgear housing, outlet boxes—without manual exertion; will not warp, break, tear or distort metal; eliminates danger of short-circuiting adjacent wires on conduit box installations, according to **PATTERSON EQUIPMENT CO., P. O. Box 163, Denair, Cal.**

Thirty pound pressure on handle produces 12,000 lb. pressure on cutting surfaces . . . cuts a clean, smooth-edge hole in less than a minute, without accident hazard to operator or equipment.

The Draw Bar is fast, flexible, simple to operate. It performs efficiently in any desired position with pump at vertical or horizontal angles. Wherever space allows hole pulling operation by present methods, the Ohio Draw Bar may be employed.

The Ohio Draw Bar uses cutters now standard for hand operated knockout punches. The Ohio model simply replaces the bolt.

Remote Control Pullers

"Center-Hole" construction in Simplex Re-Mo-Trol remote control hydraulic rams simplifies many hitherto difficult jobs, such as pulling axles, shafts, shackle studs, pins and liners, by eliminating most of the rigging usually needed, according to the manufacturers, **TEMPLETON, KENLY AND COMPANY, 1020 S. Central Ave., Chicago 44, Ill.**

Tubular ram construction allows a

Cut Costly Overhaul Time With
LONG-LIFE TOLEDO VALVES

Because Toledo Heavy Duty Valves give you 2 to 3 times more service, time out for overhaul is drastically reduced after they are installed. Time on the highway, where your money is made, is thereby proportionately increased, maintenance costs substantially decreased, and engine efficiency is definitely improved.

TOLEDO AEROTYPE VALVES . . .

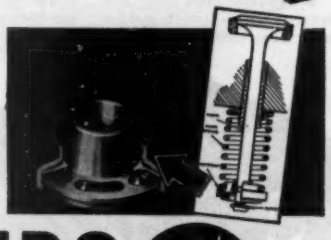
● Wear 2 to 3 times longer than ordinary valves! Newly developed X-782 facing material is applied in increased thickness. Swage hardening gives greater tip hardness, greater stem wear-resistance, plus increased tensile strength.

TOLEDO SODIUM-COOLED VALVES

● The ultimate in valves for advanced design engines of today! An aircraft development adapted by Toledo to heavy duty truck and bus use where its unique cooler operating properties increase valve service life.

TOLEDO ROTOCAP
The POSITIVE Type Valve Rotator

With Toledo Rotocaps the valve is constantly rotating at a controlled rate. Hot spots at any point are eliminated. Valve face and seat surfaces are wiped clean. More positive valve guide lubrication lessens wear. Can be used on both overhead and L-head engines.



The **TOLEDO**
STEEL PRODUCTS COMPANY
TOLEDO, OHIO
Since 1906 Makers of The World's Finest Automotive Parts

WHAT'S NEW

Continued from page 133

center pulling screw or rod to be inserted through the center-hole and secured to the object to be pulled. As the ram plunger extends, the rod is drawn through the ram, which supplies its own back-up.

Re-Mo-Trol units may also be used with pulling brackets and lateral pull rods, as well as for straightening frames, aligning axles and bodies, lifting trucks and automobiles.

Remote control insures maximum operator safety and enables application where lack of space prohibits use of self-contained units.

Complete Re-Mo-Trol units consist of pumps and rams, with necessary connecting hose. A variety of auxiliary attachments may be had. Capacities are from 10 to 100 tons.

Got any ideas that have saved you time and money? We will pay $5, $10 and up for every one we publish. Send them to HOW JADOITS EDITOR
BUS TRANSPORTATION
330 West 42nd Street
New York 18, N. Y.

We learned how to make a straight bolt ...and we DO IT!

TAKE two king bolts of another make out of your stock; lay one on top of the other; hold them up to the window. See the daylight between them? You may find a gap up to .015 inch.

Try the same test with two Monmouth King Bolts—no daylight visible.

Why? Because they are straight. We finish grind after heat treating. It costs much more in time and tools but it is the only way to make a straight bolt. So we do it that way. Another example of the engineered and precision construction of Monmouth Replacement Parts which makes them preferred by master automotive mechanics.

N. A. P. A. distribution coast to coast gives you Minute-Man delivery on wanted Monmouth Parts.

Clutch Plates and Parts

King Bolts

Bearings

All Monmouth Replacement Parts are engineered and precision made to safeguard the reputation of the master automotive mechanics and to insure user safety and satisfaction.

THE CLEVELAND GRAPHITE BRONZE CO.
REPLACEMENT SALES DIVISION
4645 Carnegie Ave. • Cleveland 3, Ohio

PERSONALS

Continued from page 64

an electrical engineer for trolley companies in Lynn and Pittsfield, Mass., later joined the transit interests of Stone and Webster Corp. He was in Texas for 20 years as equipment and operating engineer for several affiliates and made transit studies throughout the United States.

CHARLES WALTER EDWARDS, 63, former vice president and general manager of Motor Transit Co., Inc., the predecessor of the Jacksonville (Fla.) Coach Co., died recently.

He started his transit and utility career as a trolley car operator in Jacksonville in 1908.

DONALD GOODRICH, 63, former assistant treasurer of the Twin City Rapid Transit Co., died recently.

Mr. Goodrich was associated with the transit company for 38 years, until his retirement last January.

Born in Minneapolis, Mr. Goodrich was a graduate of Andover Academy and Yale University. He also attended the University of Minnesota.

DENNIS A. GOYER, who formerly owned the Utica and New York Transportation Co., died at his home in Yonkers, N. Y., recently. He was 74 years old.

HAVEN C. KELLY, formerly superintendent of way and structures for the Chicago Transit Authority and its predecessor companies, died recently in California. He was 72 years old and lived on the west coast since his retirement in 1948.

JOHN PAGE PULLIAM, 76, widely known industrialist and retired president of the Wisconsin Public Service Corp., died recently.

Mr. Pulliam two years ago retired as head of the Public Service Corp., and this year retired from his post on the board of directors. He was president of the Mississippi Valley Public Service Co., chairman of the Board of the Pusey and Jones Corp., Wilmington, Del.; the Wisconsin Securities Co. of Delaware; and the Aquaterra Co. of Wilmington. He also was a director of the Heil Co. and of the Evanston Bus Co. of Evanston, Ill.

L. C. ROBILLARD, 45, president and owner of Meridan (Miss.) City Lines, died recently of injuries incurred in a fall from a horse.

Mr. Robillard, who was also presi-

GM COACH NEWS

PONTIAC, MICHIGAN, AUGUST 1951

201 Companies Have Purchased 900 GM Light Transits

Hydra-Matic Drive . . . fully automatic transmission is standard equipment.

Rugged Coach Type Engine . . . 270 cu. in displacement.

Aluminum and Steel Body . . . 23 forward facing seats. 8 aisle facing seats at wheelhouses

Raise Type Sash . . . Non-glare, sloping windshield . . . Standee windows.

Light in Weight . . . under 10,000 pounds.

Three Step . . . Entrance and Exit.

Long, Heavy Duty Springs . . . to withstand road shock.

Big, Husky Air Brakes . . . insure greater safety.

Comfort Giving heating and ventilation . . . *and many other*

Revenue Building . . . Money Saving Features

Where a small motor coach is needed, the GM Lightweight Transit has proved to be the ideal vehicle, combining a small investment with low-cost operation.

More than 900 are now in service or on order from 201 operators. Of those who are now operating GM's Lightweight Transits, 30% have already placed Repeat Orders.

A counterpart of larger GM Coaches in design, construction, and appearance, the TGH-3101 is built in one factory, over the same jigs and tools, to the high standards of quality which have long made GM Coaches the Best to be had.

Check the many money-making features of the TGH-3101 against all others of the same passenger capacity. You will agree that never before has such a quality coach been offered for such a low price . . . approximately $8,600 f.o.b. Pontiac, including tax, less tires. As low and even lower than other coaches of comparable size.

ADV.

GM Light Transits Build Profitable System

New Company—New Vehicles Boost Riding 25% at Port Huron, Michigan

Residents of Port Huron, Mich., wanted good motor coach service and they got it.

When a former company failed to comply with demands to improve service and equipment, the City Council took action. A new company was formed and a new franchise was overwhelmingly adopted at the 1950 general election.

The new company . . . Port Huron Bus Co. . . . started operating in December 1950 with 16 GM Light Transits seating 27 and 31 passengers.

Patronage of the new system immediately reflected an increase of 25% and has consistently held this improvement.

Fare is 10c cash for adults, 5c for school children. Owners feel that the 10c fare will produce more revenue than a higher rate in this city of 35,590 population through continuation of riding.

System uses 13 vehicles for base schedule with an additional tripper at peak hours, thus permitting three units for spares and service rotation.

Coaches operate 71,000 miles per month at a fuel average of 6.17 miles per gallon.

Total operating costs are approximately 31c per mile. Service personnel consists of two washers and cleaners and three mechanics, one of which is a working foreman.

4 REPEAT ORDERS A TESTIMONIAL TO ALL-AROUND PERFORMANCE

Lexington (Ky.) Railway System, Inc., started operating GM Light Transit Coaches in August 1949 when 5 were placed in service.

The company was so well satisfied with the fuel economy and the performance of these coaches that 20 more went into service in July 1950. This year in June and July another 20 were delivered and 10 more are scheduled for fall delivery, which will bring the total of GM Light Transits on the property to 55.

Fuel average on the fleet is 5.5 miles per gallon, with bus stops averaging more than 11 per mile.

No Jolt-No Jerk operation due to Hydra-Matic Drive has made a hit with the drivers and riders. The TGH-3101 is the only light Transit Coach in the low price field which has a fully automatic transmission. With no gears to shift, no clutch pedal to operate, the driver is saved thousands of manual motions a day. Operating life of the engine, axles, springs, wheels and coach body parts is greatly increased.

The ready accessibility of the complete power train has appealed to maintenance personnel and has kept maintenance cost to a minimum.

We know of no better testimonial for a motor coach than *Repeat Orders* . . . Lexington has placed 4 Repeat Orders.

CITY-SUBURBAN "31" TRANSITS DO THE JOB

Lake Shore Coach Lines Are Enthusiastic; Anxiously Await 7 More

Lake Shore Coach Lines serving Grosse Pointe communities and St. Clair Shores, two of Detroit's finest suburbs, is enthusiastic over 10 GM TGH-3101's placed in service last September.

Providing both local and suburban service, the coaches have done an outstanding job. During the recent transit strike in Detroit the coaches for two months operated on heavy main line schedules.

Writes W. J. Dale, Superintendent of Maintenance:

"Performance of the TGH-3101's to date has exceeded all our expectations. From the viewpoint of maintenance, practically trouble-free.

"It is our opinion that the 270 engine with Hydra-Matic transmission properly maintained make an ideal combination for a coach of this capacity. Operating personnel are enthusiastic about the performance of this job. Acceptance of the riding public has been gratifying and numerous compliments have been received.

A Fleet That Really Works

"We are anxiously awaiting delivery of seven (7) more of these jobs."

Since September the 10 TGH-3101's have operated an average of 24,590 miles at an average of 5.60 miles per gallon of fuel and 491.9 miles per quart of oil.

OVER 200 OPERATORS NOW HAVE OR HAVE ORDERED GM LIGHT TRANSITS

Adrian City Bus Line (Mich.)	2
Airlines Transit Corp. (Mo.)	2
Albany Cohoes Bus Line (N.Y.)	2
Amarillo Bus Co. (Tex.)	5
*American Industrial Tr. (Tenn.)	60
Armijo Bus Co. (N.M.)	2
*Asheboro Coach Co. (N.C.)	2
Ashland Bus Co. (Wisc.)	1
*Auch Inter-Borough Tr. Co. (Pa.)	6
*Austin Motor Coach Co. (Pa.)	2
*Balcer Bros. Mtr. Coach Co. (Mich.)	2
Bartonville Bus Line (Ill.)	2
*Batavia Motor Coach (N.Y.)	2
Battle Creek Coach Co. (Mich.)	6
Beaumont City Lines, Inc. (Tex.)	15
*Beelman, Boyd A. (Ore.)	2
*Benicia-Vallejo Stage Line (Calif.)	2
*Beninger Transp. Service (Calif.)	2
B-K-W Coach Lines (Pa.)	2
*Blue Bird Coach Line (N.Y.)	2
Bolt-Highway-Wolf Tr. Co. (Mich.)	1
*Bossier-Shreveport Tr. Co. (La.)	5
Boston & Maine Transp. Co. (Mass.)	4
Bristow Lines (Va.)	1
Bucher Bus Lines (Tex.)	1
Burlington City Line, Inc. (Iowa)	5
*California Bus Service (Pa.)	2
Cape Transit Corp. (Mo.)	3
Capital Transit Co. (Ky.)	4
Capitol Transit Co. Inc. (W.Va.)	8
Car Leasing Co. (Ill.)	6
Carpenter's Rapid Tr., Inc. (Mich.)	2
Caterpillar Tractor Co. (Ill.)	1
*Chestnut Ridge Transp. Co. (Pa.)	4
Chico Transit Lines (Calif.)	1
Cities Service Bus Co., Inc. (Mo.)	1
Citizen Auto Stage Co. (Ariz.)	1
*Citizens Transit Lines (Calif.)	4
*City Bus Co. (Okla.)	50
City Bus Co. (Wisc.)	1
City Bus Line (Ind.)	1
City Bus Lines, Inc. (Conn.)	1
City Bus Lines (Tenn.)	2
City Railway Co. (O.)	3
City Rapid Transit Co. (N.C.)	5
*City Transp. Co. (Tenn.)	7
*Utilities of Springfield (Mo.)	5
Clayton School District (Mo.)	1
Colonial Williamsburg Inc. (Va.)	3
Columbus-Celina Coach Lines (O.)	3
Community Motor Bus Co. (Va.)	5
Community Transit Lines (Calif.)	1
*Cook Transp. Co. (Utah)	2
*Corning Bus Line Inc. (N.Y.)	7
Cornwall St. Ry. Lt. & Pr. Co. (Ont.)	2
*Cortland Co. Bus Lines, Inc. (N.Y.)	3
Coshocton City Lines, Inc. (O.)	2
Cowan, M. F. (N.Y.)	1
Culver City Muni. Bus Lines (Calif.)	2
Delaware Valley Transp. Co. (Pa.)	1
Dade Co. Children's Home (Fla.)	1
*Danville Bus Line (Ind.)	2
Debolt Transit Co. (Pa.)	2
Decatur City Lines (Ala.)	2
Department of Justice (D.C.)	1
Douglas Aircraft Inc. (Calif.)	3
Elgin City Lines, Inc. (Ill.)	5
Elyria Coach Co. (O.)	1
Fr. Flanagan's Boys' Town (Nebr.)	1
*Fidelity Mtr. Bus Lines, Inc. (O.)	7
Fond du Lac City Lines (Wis.)	3
Fort Crook Bus Lines (Nebr.)	5
Fulmer, E. P. (S.C.)	3
Galveston Transit Co. (Tex.)	8
Gardena Muni. Bus Line (Calif.)	1
*Gary-Hobart-Valparaiso Tr. (Ind.)	4
Gastonia Transit Co. Inc. (N.C.)	2
*GM Overseas { Egypt	1
*GM Overseas { Havana	112
*GM Overseas { Venezuela	1
Gongaware & Son, H. J. (Pa.)	2
*Goodlette Bus Lines (Ky.)	3
Grandville Wyoming Tr. Inc. (Mich.)	1
Gump Bus Line (W.Va.)	1
Hamilton City Lines (O.)	10
Hamilton, Harry J. (Pa.)	1
Hannibal Transp. Co. (Mo.)	2
Heilman, Tedroe (Pa.)	1
Hot Springs St. Rwy. Co. (Ark.)	4
*Illinois Highway Tr. Co. (Ill.)	4
Illinois Terminal R.R. (Mo.)	2
Intercity Transit Co. (Ark.)	5
Kannapolis Transit Co. (N.C.)	2
Kewanee City Lines (Ill.)	1
Kingston City Transp. Co. (N.Y.)	4
Klix, Herman School Dis. No. 7	1
Lakeland Transp. Co. (Conn.)	1
*Lake Shore Coach Lines (Mich.)	17
Lansing Suburban Lines (Mich.)	4
Laredo Transp. Co. (Tex.)	8
Latrobe Bus Lines (Pa.)	1
Latrobe Bus Service (Pa.)	2
Laurel City Lines, Inc. (Miss.)	2
Lead Belt Tr. Lines, Inc. (Mo.)	1
Levy's Bus Service (Pa.)	1
*Lewis Bus Line (Tenn.)	2
*Lexington Railway System (Ky.)	55
*Lincoln Coach Lines (Pa.)	6
*Lockport Bus Lines, Inc. (N.Y.)	3
Longview Public Serv. Co. (Wash.)	2
Louisiana Transit Co. (La.)	1
*Lower Valley Bus Line (Tex.)	8
*Lubbock Bus Co. (Tex.)	9
Lycoming Auto Transit Co. (Pa.)	2
Chas. Manfre Transp. Co. (Calif.)	1
Marietta Coach Co. Inc. (Ga.)	2
Marquette Transit Co. (Mich.)	2
Mauzy Bus Line (Mich.)	1
*McCoy Bros. Bus Lines (Pa.)	4
McKee, Russell (Pa.)	1
*Meridian City Lines (Miss.)	5
Minot Motor Coach (N.D.)	1
Minuskin Bus Co. (N.J.)	1
*Mississippi City Lines (Miss.)	7
Mon Valley Bus Co. (Pa.)	2
Moss Point-Pascagoula Lines (Miss.)	1
Natchez City Lines (Miss.)	2
Newburgh Bus Corp. (N.Y.)	5
New Mexico Transp. Co. (N.M.)	1
Niles Transit Lines (Mich.)	1
Norman City Lines (Okla.)	3
North Haledon Transit Co. (N.J.)	2
N.W. Arkansas Tr. Lines Inc. (Ark.)	1
No. 2 Bus Line (W.Va.)	1
Oak Hill Transit Co. (W.Va.)	2
*Ogden Transit Co. (Utah)	11

Continued on next page

America's Finest—Most Economical School Bus

55 Children Go to School in GM TGH-3101

Herman Klix School District No. 7, near Mt. Clemens, Mich. wanted something a little better than the conventional school bus.

The GM Light Transit Model TGH-3101 was just the answer.

Hydra-Matic drive gives the children a No Jolt-No Jerk ride to and from school and big, husky air brakes assure them the greatest safety.

Comfortably seating 55 children, the TGH-3101 school bus is a typical GM long-life coach, which will give on-time, uninterrupted service at a low cost of operation.

Continued from page 3

Ohio Rapid Transit, Inc. (O.)	5
Oldsmobile Div. GMC (Mich.)	1
Orange St. Bus Line, Inc. (Conn.)	1
Ordnance Tank-Automotive Ctr. (Mich.)	2
Ortman-Stewart Transp. (O.)	1
Oshkosh City Lines (Wisc.)	2
Parkersburg Transit Co. (W.Va.)	1
Panzera, Jos. C. (Pa.)	1
*Pensacola Transit Co. (Fla.)	2
Peoria Rockford Bus Co. (Ill.)	1
Petro Bus Line (Pa.)	1
Plainview Bus Co. (Tex.)	1
Poplar Bluff City Lines (Mo.)	1
Port Arthur City Lines, Inc. (Tex.)	5
*Port Huron Bus Co. (Mich.)	18
*Portsmouth Transit Co. (Va.)	20
*Potomac-Edison Co. (Md.)	11
*Public Service Co. of Colorado	4
Raleigh Transit Co. (W.Va.)	2
Rapid Traction Co. (S.D.)	1
Rapid Transit Co. (Kans.)	1
*Reno Bus Line, Inc. (Nevada)	5
*Rochester Bus Lines (Minn.)	2
*Rockland Bus Lines (N.Y.)	2
Rubin, Isadore (Pa.)	1
Safety Transit Co. (N.C.)	1
Salina Transit Co. (Kans.)	1
Santa Barbara Mtr. Coach (Calif.)	4
Santa Cruz Transit Co. (Calif.)	1
*Schneider Bus Lines (Mo.)	2
Schulte Transp. Co. (Mo.)	1
*Schuylkill Transit Co. (Pa.)	10
*Scott-Nickels Bus Co. (W.Va.)	3
Shreveport Railways Co. (La.)	7
Sioux Transit Co. (S.D.)	4

40 for Oklahoma City Bus Company

City Bus Company, Oklahoma City, Okla., was delivered one TGH-3101 GM Light Transit in 1950. Successful operating experience caused the company to purchase 39 more . . . all of which have been delivered.

Soldiers Home Bus Line (N.Y.)	1
*Southern Bus Corp. (S.C.)	4
*Stanley Bus Co. (O.)	2
St. John Transp. Co. (O.)	2
Statesville Motor Coach (N.C.)	1
*Suburban Bus Lines (Tenn.)	3
Suburban Lines, Inc. (Ind.)	1
*Suburban Transit Corp. (N.J.)	10
Suburban Transp. Co. (Kans.)	6
The Short Line Inc. of Penna.	2
*Transit Service Corp. (Mo.)	20
*Tri-City Traction Co. (W.Va.)	10
Twin City Transit Co. (Ark.)	6
Tyler Mountain Bus Line (W.Va.)	2
*Tyler Transit Co. (Texas)	2
Victoria Transp. Co. (Texas)	4
Warren City Lines (Pa.)	2
Wentworth Bus Lines (N.J.)	1
West Memphis Transp. Co. (Ark.)	6
Whitfield Bus Lines (N.M.)	2
*Wichita Transp. Co. (Kans.)	3
Wilson Trucking Corp. (Va.)	2
Winona Transit Co. (Minn.)	2
Wyatt Lines, Inc. (Va.)	1
Yeaman Transit Co. (Iowa)	2
*Yellow Cab Co. (N.D.)	2
Yellow Cab Co. (Utah)	2
Ypsilanti Motor Coach (Mich.)	1
Zanesville Rapid Tr., Inc. (O.)	3

**Repeat Orders*

PRINTED IN U.S.A.

dent of the Laurel (Miss.) City Lines, was thrown from his horse when the animal ran into a tree.

News of Manufacturers

Continued from page 66

in operation and maintenance at a time when more service must be provided for mobilization needs and in a period of coach and parts conservation.

HOWARD N. WILHELM, new president and general manager of the RiteSet Manufacturing Co., in Los Angeles, has announced an expanded sales and manufacturing program to be conducted by his firm.

Mr. Wilhelm says that negotiations for additional floor space adjacent to the present plant have already been completed.

RiteSet makes automotive brake linings. The president also announced the election of **Arch C. Shafer** to the position of vice president in charge of sales, and the election of **Ken Nichols** as secretary and treasurer.

JOHN M. ROBINSON, vice president-finance, the DeVilbiss Company, Toledo, was elected a new member of the board of directors at a recent special meeting.

Mr. Robinson joined the company as treasurer in 1946, with a background of industrial accounting and public tax and accounting work. In January, 1950, he was advanced to vice president and treasurer, and in April of this year he assumed the financial vice presidency.

ROCKWELL MANUFACTURING CO., makers of fare registerers and power tools, among other products, is constructing a one-story building, covering 150,000 square feet, in Tupelo, Miss., where the company will build some of its products.

GEORGE WALKER SAWIN, president, B. F. Goodrich Rubber Co. of Canada, Ltd., Kitchener, Ont., since 1941, has resigned because of ill health. Mr. Sawin, with B. F. Goodrich since 1913, suffered a severe fall in December, 1950. While he has made a remarkable recovery he will now take an extended leave of absence.

He joined B. F. Goodrich following his graduation from the University of Delaware.

* * *

Radioactive materials are being used in special tires by rubber research scientists conducting tests to determine tread wear.

Continued on next page

FLEXLOC®

SELF-LOCKING NUTS

Help PTC to "KEEP 'EM ROLLING"!

Every day thousands of Philadelphians depend on Philadelphia Transportation Company buses. To "keep 'em rolling," PTC's maintenance must be constant and thorough, since minor failures often cause major breakdowns.

For example, the hex nuts on bus rear axle flanges were being loosened by vibration, despite periodic inspections. Sheared studs resulted. Replacements were expensive, disrupted schedules and loss of riders' goodwill even more so. PTC tried FLEXLOC Self-Locking Nuts, found them a simple, economical solution to the problem.

FLEXLOCs *stayed tight,* eliminated shearing of studs. Yet FLEXLOCs were easy to remove when necessary, could be re-used again and again. Furthermore, FLEXLOC *dependability* reduced the number of maintenance checks needed, effecting additional savings.

If you have to contend with vibration in your business, try FLEXLOC Self-Locking Nuts—free! Just tell us the size, and we'll gladly send samples.

SPS STANDARD PRESSED STEEL CO.

JENKINTOWN 4, PENNSYLVANIA

REDUCE MAINTENANCE COSTS

Use Moto-Gard to reduce Maintenance Costs and insure Longer Life for Your Motors. Moto-Gard will protect your Motor against Damage from an Oil Failure or Overheating. It automatically stops the Motor Ahead of Any Damage if the Oil Pressure runs too low or the Motor gets too hot. MOTO-GARD will make your Equipment Safer and More Profitable.

REASONABLY PRICED . . . EASILY INSTALLED

Full Information on Request

"Don't Buy Motors—Buy Moto-Gard"

THE MOTO-GARD COMPANY

Box 2425

Raleigh, North Carolina

"This one clamp saves a dozen trips to the stockroom"

"Aero-Seal"
WORM DRIVE
HOSE CLAMPS
with Stainless Steel bands.

No need for a trip to the stockroom for a clamp to tighten a leaky hose. Overhaul after overhaul, season after season, the mechanic simply replaces the worn hose and re-uses the same Aero-Seal Hose Clamp.

WON'T CRIMP—CAN'T LEAK

Worm drive applies even pressure all round the hose. Smooth saddle prevents cutting. No crimping—Aero-Seal can be replaced in any position. Three threads of worm always engage deep into slots of stainless steel band... hold hose tight over a million miles of roads!

REPLACE ANYWHERE—ANY TIME

A man can install an Aero-Seal any place he can reach with thumb and finger. Integral construction—no parts to lose. Self-feeding when worm engages band. Screw-driver slot or thumb grip screw styles. Tighten with a twist of the wrist.

Fit most transportation industry needs. Write for FREE SAMPLE today.

"Aero-Seal" WORM DRIVE HOSE CLAMPS
ANOTHER BREEZE PRODUCT

BREEZE CORPORATIONS, INC.
41 South Sixth St., Newark, N. J.

News of Manufacturers

Continued from page 135

This new method, according to Dr. William L. Davidson, director of physical research at the B. F. Goodrich research center, has the advantage of giving instantaneous data and enabling the valuation of such factors as the type of road surface and temperature, speed, tire pressure and transmission of power on tread wear.

There are no completely satisfactory laboratory tests for determining tire tread wear, Dr. Davidson said, and the usual method consists of conducting actual road tests by large fleets of automobiles and trucks. These are costly and time consuming since a tire must be run at least 5,000 miles to observe measurable wear, he pointed out.

GENERAL MOTORS CORP. has set up a desert proving ground for hot-weather testing of trucks, automobiles, buses, tanks, and other military vehicles on 2,280 acres southeast of Mesa, Ariz. GM has been testing vehicles at other Arizona sites for 24 years.

The new course, which will include initial construction of five-mile circular banked track and a level straightaway of approximately two miles, will be used for controlled tests of heat rejection, fuel and oil economy, vehicle performance, brake deceleration, and durability under heat and sand conditions.

* * *

Thomas E. Wilson has been named production manager of the GMC Truck and Coach division.

In his new capacity Mr. Wilson will be responsible for the production, purchasing and traffic activities of the division. He joined GMC Truck and Coach in 1942 as labor relations supervisor, and in 1944 became director of personnel.

Succeeding Mr. Wilson in the latter position is **Earl A. Maxwell,** who has been supervisor of employment and salaried personnel relations since 1948.

* * *

Charles Matson has been appointed general supervisor of material control for coaches and trucks in the GMC Truck and Coach division.

Mr. Matson has been supervisor of material and production control for the Coach division of GMC Truck and Coach since 1943. He joined the division as a clerk in 1924.

WALTER L. LULI has been appointed chief engineer of the Coach division of White Motor Co. He will

Walter A. Luli

make his headquarters at the coach plant in Cleveland, where coach engineering work will be under the direction of White's general engineering division.

Mr. Luli has been in the bus industry for the past 16 years. He is a graduate of Ohio State University.

GOODYEAR TIRE & RUBBER CO. directors recently voted a two-for-one stock split of the company's common shares. It applies to stock of record Aug. 15. And a dividend of 75 cents per share on the split stock was authorized by the board, payable Sept. 15 to stockholders of record Aug. 15.

* * *

Inefficient use of America's synthetic rubber plants cost the consuming public an additional $500,000,000 for the year ending May 1, 1951, P. W. Litchfield, chairman of the board of the Goodyear Co., says.

Mr. Litchfield points out that skyrocketing prices of natural rubber last year resulted from inadequate synthetic production, inventories and stockpile.

SAMUEL MOORE & CO., Mantua, Ohio, is celebrating the completion of a four-year expansion program. Additions since 1947 have meant a 49 per cent increase in floor space; new facilities include a warehouse wing, a new building for adhesive manufacture and the addition of a number of high-speed machines.

WILLIAM O. HEBLER has been appointed director of research for Petroleum Solvents Corp., manufacturers of "SILOO" products.

Mr. Hebler, well-known authority on fuels and lubricants, had been associated with Petroleum Solvents prior to World War II, when he left to do confidential research work for the U. S. Navy.

MAJ. GEN R. C. COUPLAND (USAF, ret.) has been named manager of the

newly-created product development department of the Metal Products Division of the Koppers Co.

General Coupland will supervise and coordinate all activities in connection with product development, improvement and acquisition, said Walter F. Perkins, vice president and general manager of the division.

General Coupland is a graduate of Virginia Military Institute. At the time of his retirement he was commanding general, Air Materiel Armament Test Center, Elgin Air Force Base, Fla.

TIMKEN DETROIT AXLE *News* is devoted this issue to the problem of counteracting propagandists who say that heavy buses and trucks are breaking down U. S. highways. The *News* points out that the famed Maryland tests are not conclusive, and prints a number of photographs of damaged roads over which heavy vehicles have never rolled, including one shot of a washed-out highway which has never even been opened to the public. For copies of the *News*, write The Editor, Timken Detroit Axle *News*, Detroit, Mich.

IRA G. NEEDLES, vice president of the B. F. Goodrich Co. of Canada, Ltd., since 1945, has been elected president. He succeeds George W. Sawin, resigned.

Mr. Needles joined B. F. Goodrich in 1916. In 1925 he became a member of the Canadian company. He was assistant sales manager of the Tire Division until 1930, when he was made general tire sales manager. He was elected vice president-sales in 1945.

EARL H. LEWIS has been named assistant wholesale manager and assistant to the vice president in charge of sales at White Motor Co.

SUPERIOR COACH Co., Lima, Ohio, recently received the American Society of Industrial Engineers' Merit Award. Said ASIE President Robert L. Crinnian in presenting the award: "The ASIE commends the inspired faith of the Superior Coach family, the excellence and dependability of its product and its major contribution to the advancement of the arts and sciences."

REO MOTORS INC., reported the greatest profits before taxes for any six-month period in the 47-year history of the company.

For the six months ended June 30 Reo had a net profit, after provision for federal income taxes, of $1,759,-

Continued on next page

RIGIDIZED METAL . . .
Specified

IN MANY INDUSTRIES
. . . for its
- GREATER FLEXURAL RIGIDITY
- HIGHER IMPACT STRENGTH
- LONGER LIFE

MILITARY — electronic cases, bus seat backs, aircraft parts, X-Ray cases . . .

COMMERCIAL — counter and bar fronts, drink dispensers, signs, shipping boxes, containers, show cases, radio grilles . . .

CONSUMER—refrigerators, deep freezers, stoves, fans, sun visors, lighting fixtures, door knobs, table tops, lamps . . .

ARCHITECTURAL—curtain walls, building panels, elevator panels, store fronts, ceilings, doors, flooring, trim . . .

TRANSPORTATION — railroad seat backs, wainscoting, truck flooring, kick-plates, treadplates . . .

Versatile Rigidized Metal offers unlimited product applications to every industry. Increased strength through a redistribution of metal permits reductions in gage that *conserve strategic materials* and costs. Scratch-resistant, impact-resistant surfaces add to product life.

SEND FOR YOUR COPY of the Rigidized Metals CONSERVATION Handbook on your company letterhead today.

THE 3 DIMENSIONAL METAL

Rigidized Metals Corporation

672 OHIO STREET BUFFALO 3, NEW YORK

Save *Time and Labor* Stripping Paint!

Paint stripping can be a terrific consumer of man-hours—or it can be put on a clean-cut production basis with

MAGNUS STRIPIT

Brush Magnus Stripit on the surface to be stripped. Watch the finish begin to pucker. In a few minutes you can start knocking off the finish with hose or steam. Stripit is economical—1 gal. covers 100 sq. ft. One application strips several coats (including primer). It clings to vertical surfaces, and spreads evenly. It is safe for all metals and wood. It is non-combustible.

Whether you strip often or only once in a while, Stripit will save you time and labor. Ask us to send the Stripit Bulletin.

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FOR 10 DAYS

To prove the superior, easy cleaning ability of FLO-PAC fountain brushes, we offer to return the full purchase price of any FLO-PAC brush if you are not completely satisfied after 10 days trial.

BUSWASH, with aluminum head and rubber protective bumper, has 5 in. dia. head. Model 650H with replaceable horsehair bristles—only $9.25. Model 650BM with nylon mixture—$13.65, and Model 650N with nylon and horsehair combination—$10.15.

Both brushes come with 5 ft. stainless steel tubing handle with brass hose connection.

FLEETWASH combines the features of Bushwash with a head that flares to a full 12 in. Model No. 366N filled with horsehair and nylon combination—$10.90. Model 366 with a nylon mixture—$16.35.

RUSH YOUR ORDER TODAY!

FLO-PAC

FLOUR CITY BRUSH CO.
1501 4th Ave., So.
Minneapolis 4, Minn.

PACIFIC COAST BRUSH CO.
1507 Santa Fe Ave.
Los Angeles 21, Calif.

514A

News of Manufacturers

Continued from page 137

000, equal to $3.57 per share. It compared with a net profit after taxes of $390,795, equal to 80 cents a share, for the first six months of 1950.

The 1951 figure was based on record-breaking sales of $57 million for the half-year.

THE RUBBER MANUFACTURERS ASSOCIATION says that controls on the use of rubber in effect for the first six months of 1951 resulted in drastic changes in the pattern of rubber consumption when compared with the same period of 1950.

While total new rubber consumption rose two per cent to 610,941 long tons in the first six months of 1951 against 599,045 for the same period in 1950, the use of natural rubber declined 33.65 per cent to 240,517 long tons from 362,491 tons in 1950, and synthetic rubber use increased 56.59 per cent to 370,424 long tons from 236,554 tons in the prior period.

ALUMINUM COMPANY OF AMERICA has announced that it will build a new aluminum smelting plant which will be the first in history to use lignite (sub-bituminous coal) for fuel.

The plant will have a production capacity of 85,000 tons of aluminum annually when completed. Production is expected to start in the early fall of 1952, and when in full operation the plant will employ about 1,000 people.

ALCOA's new plant is to be located at one of several locations, all about 60 miles south of Waco, Texas, in Milam county, where there are large deposits of lignite. The feasibility of using the material as fuel for the production of aluminum resulted recently, after new developments in fuel technology.

The black, coal-like material can be extracted both by strip and by slope mining, taken straight from the mine to the power plant furnaces.

WALKER MANUFACTURING CO. has announced two changes in its field sales organization:

GENE HARTNETT, who has served as a home office specialist on the company's line of automotive filters and replacement cartridges, has been promoted to district filter sales representative for the Illinois-Michigan area.

Replacing him on the home office staff will be **EINAR C. LOVEGREN,** who joins Walker after 14 years' experience in hardware sales and hotel management. Mr. Lovegren will make his headquarters at the company's home office in Racine, Wis., and will conduct district sales meetings and dealer sales programs throughout the country.

WINSTON CRAIGMILE has been promoted to district salesman in the north central area on the complete Walker line of exhaust system equipment, jacks, electric lifts and oil filters.

OBITUARIES

EDWARD H. HOLMEN, 43, manager of sales and merchandising for the tire division of the Dayton Rubber Co., Dayton, Ohio, died recently in Dayton.

Mr. Holmen joined Dayton Rubber in January, 1947, coming from Firestone, where for 18 years he worked in all phases of selling and merchandising of passenger and truck tires and was also truck tire sales manager.

WILBUR A. MAYNARD, 76, vice president and general manager of the New England division of the Mack Motor Truck Co. and dean of commercial vehicle dealers in New England, died recently in Newton, Mass.

WASHER BRUSHES

Like this, mean longer life for Your Paint Jobs They Cleanse without Abrasive Scrubbing—Harsh Solvents . . .

Washer Brushes on Whiting Washers are soft and gentle on your paint jobs—yet they have long, tough fibres for wear, and you gain a twofold benefit. Longer life for your paint jobs. Longer wearing brushes.

Another feature in Whiting Washer Brushes is the density control of each individual brush. Brushes properly staggered eliminate streaks. The Whiting Brush core is of molded plastic construction with ten slots in each core section so that individual replacements may be made in a matter of seconds. Fullergript brush strips make changeovers a simple operation.

ENGINEERED TO YOUR NEEDS

To meet your particular requirements, Whiting Bus Washers are available in a number of design variations—with side brushes only—or with side, eave, and roof brushes.

Mail the coupon, today!

*Reg. U. S. Pat. Off.

WHITING* WASHERS FOR BUSES & TRUCKS

Whiting Corporation,
15695 Lathrop Ave., Harvey, Illinois

Please send information on Whiting Brushes.

Name_____

Address_____

City_____ Zone____ State_____

THIS MAN WOULDN'T NEGLECT

A MACHINE IN HIS PLANT

...yet he hasn't had a Chest X-Ray!

He checks every piece of mechanical equipment he owns for wear, lubrication, efficiency.

Yet he fails to take the simple precaution of a Chest X-Ray to make sure he does not have tuberculosis. *Not because he's opposed to the X-Ray. Simply because he is not sufficiently informed—or just hasn't taken the time and trouble, or does not realize the seriousness of the problem.*

A Chest X-Ray is the first step toward detecting tuberculosis in its early stages. And in its early stages it can be cured with the least loss of time from work.

So, if you're the man above, that one simple reason should make you get your Chest X-Ray—*today*. But listen, see how serious this really is:

Between the ages of 15 and 34, tuberculosis leads all other diseases as a cause of death—although at no age are you safe from TB. Yet, if everyone does his part by getting a Chest X-Ray periodically, and the majority of cases thus discovered are followed up, we can eliminate TB entirely as a public health hazard!

Will you do your part today? Get a Chest X-Ray. It may mean your life!

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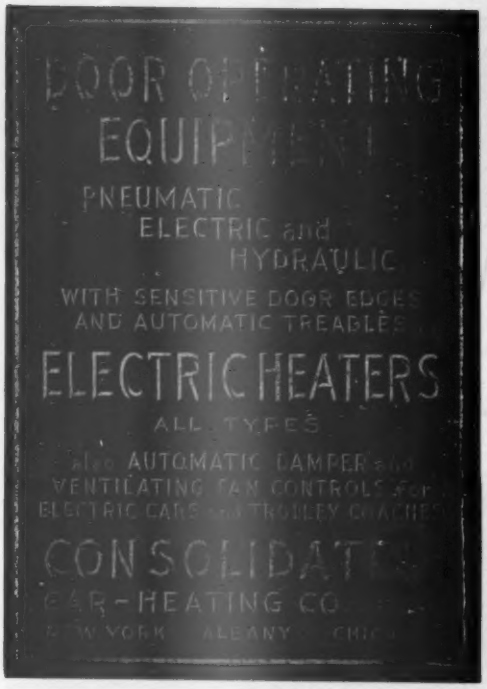

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Departmental Staff
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When a bus armature goes out of service because of the Commutator—get it back on the job—save money.

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Ours is a re-manufacturing service that is not costly and is used by operators throughout the country. Commutators are speedily made according to our own specifications—not bought as a stock item. You will be surprised at the savings you can make because of our moderate charge.

We suggest that you write for the details—you'll find this service an ideal one—a service that pays off in your favor.

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AUTOMOTIVE GENERATOR SERVICE
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IF IT'S here...
IT'S news...
IT'S WORTH STOPPING TO SEE!

Maybe Industry doesn't maintain show windows on Fifth Avenue or State Street or Wilshire Boulevard like America's great department stores. But your industry has a mighty effective show window ... *and this is it* ... this magazine. In these advertising pages alert manufacturers show their wares. Here you will find up-to-the-minute news about products and services designed to help you do your job better, quicker, and cheaper. To be well-informed about the latest developments in *your* business, *your* industry ... and to stay well-informed ... *read all the ads too.*

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CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

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INCREASE YOUR REVENUE BY INCREASING CAPACITY

● We can lengthen your 32 or 36 passenger G.M.C. city service coaches . . . to 40 passenger size . . . We have performed this miracle on over 50 coaches for a large transit company with complete satisfaction.

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Mgr. J. W. KUKLINSKI

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Top quality workmanship in the finest of modern materials such as Mohair — Koroseal — Naugahyde —Candalon — Nylon and others. *Ask our long list of satisfied customers about us.*

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PROMPT, DEPENDABLE SERVICE
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GOOD AS NEW—QUICK! THE PERFECT WAY

Complete repairs on buses of all makes and models. We are fully equipped also to do a thorough painting, trimming and lettering job. For fast, competent, complete, economical service — write, wire or phone: Union 3-4602, Delaware 3-4122, Essex 3-1698.

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Bus Line in City of
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B O 1476 Bus Transportation
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City Bus Line in Hastings, Nebraska. Population 25,000. 3 Routes in City and 3 Routes to the Hastings Naval Ammunition Depot. 2,000 people work at Depot. College town. Best city in middle west.
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GOOD SITUATION offered in a suburban operation, for a good mechanic experienced in bus maintenance including G.M. Diesel. Our fleet is small but practically all diesel. Write to P 9281, Bus Transportation, giving full details of past experience.

SHOP FOREMAN with experience on Diesel Buses to supervise maintenance inspection. Good pay is offered a capable and ambitious man. P 9748, Bus Transportation.

POSITIONS WANTED

AVAILABLE SOON, Capable Bus Executive seeks connection—possesses analytical ability to solve perplexing problems—am a diplomat and negotiator—have had considerable management and labor relations experience: age, in my forties—enjoy excellent health. PW 9500, Bus Transportation.

OPERATING, TRAFFIC manager, age 39, twenty years practical experience in tariffs, scheduling, labor relations. PW 1152, Bus Transportation.

TRAFFIC ANALYST and Schedule-maker consultant and worker long experience large city operation buses and trolleys. PW-1424, Bus Transportation.

YOUNG CANADIAN Bus Executive, recently sold own Bus Lines, desires position with American or Canadian Firm, preferably on West Coast. Experience is from ground up to ownership, excellent references supplied. What have you to offer. Prefer small city operation. PW-1430, Bus Transportation.

CHARTER MAN soon available. A-1 experience with large carrier in promotion of school trips, charters, tours, sightseeing. Young, person, Veteran. To boost your business. Prefer position Western United States. References furnished. PW-1534, Bus Transportation.

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Airport Limousine Franchise and Equipment for sale in City of 250,000 population protected by Public Service Certificate. At present time doing 75,000 business per year, and will increase 10 to 20% per year for the next 10 years. Golden Opportunity for young man of means. BO-1448, Bus Transportation.

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4 ROUTES IN OPERATION OUT OF TERRE HAUTE, IND.

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1—1948 Model 21 Pass. Flxible
is very nice, Chev. Power, Low Mileage Coach.
1—1945 Model 29 Pass. Flxible
very clean, Buick Power, Refinished.

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BEST BUY FOR YOUR $$

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- 3 PD 3702, 37 pass. reclining seats
- 10 TD 2701, 27 passenger city type
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- 4 1945 Aerocoaches—37 pass.
- 1 1947 Aerocoach—37 pass.
- 2 1947 Fitzjohn Duraliners—28 pass.
- 1 1948 310 Fitzjohn City-liner—very clean
- 1 1946 37 pass. Beck, 450 Red Diamond Eng.
- 10 ACF's model C-36

Large selection of city transit type Twins, GMC 1204, 728, 2701-6, 733; Macks; Fitzjohns; various models of school buses; various years in Aerocoaches, Flxibles, Fitzjohn Duraliners and Falcons. Selection of Ford Transits.

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3—1945 Fitzjohn	36 passenger
1—1941 Fitzjohn	29 passenger
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3 Mack—37 Pass., 2 Doors, 1948-49, Gas and Diesel
10 Mack—32 Pass., 2 Doors, Model LC, 1942
20 Yellow—36 Pass., Model 3609, 1944-47
2 Beavers—36 Pass., 1947
20 Whites—37-45 Pass., Model 788, 798
25 Fords—27 and 29 Pass., 1945-48
10 Whites—Model 782, 31 Pass., 2 Door

DELUXE

15 Arrow Coaches—37 Pass., 1942-49
3 Yellow Diesel—29-33 Pass., 1948
7 ACF—37 Pass., 1940-42
10 Becks—24-37 Pass., 1945-48
10 Flexibles—25-33 Pass., 1941-48
7 Yellow Diesels—33 Pass., 1945
5 Yellow Diesels—37 Pass., 1941-47
10 Yellow Gas—29-37 Pass., 1942-45

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FOR SALE
3

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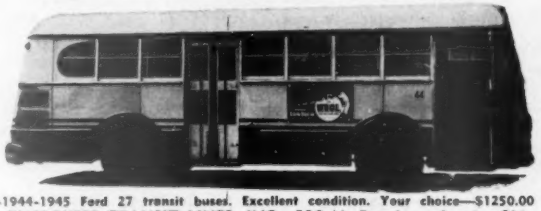

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44 Flxible—29 pass.
41 Flxible—25 pass.
47 Fitzjohn—28 pass. Duraliner
45 Fitzjohn—35 pass. Falcon
43 & 44 Fitzjohn—35 pass. Cityliner

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1—1949 60-Pass. F-7 Ford Bus with Superior Body, comletely equipped. Run one year only.

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14 American Wicker blue Leather Bus Seats
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Good Rubber on All, A-1 Shape

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Completely Rebuilt throughout

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400 FOUNTAIN ST
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3—	1949 Flxibles, 37 pass.
2—	1947 Flxibles, 33 pass.
12—	1943 Macks CM., 40 pass. Transits
4—	1949 Transit Buses, 33 pass.
11—	1946 to 1951 School Buses.

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2—1940 GMC PG 3701.

2—1941 GMC PD 2902.

1—1943 GMC PG 3301.

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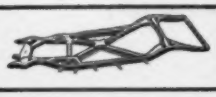

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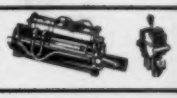

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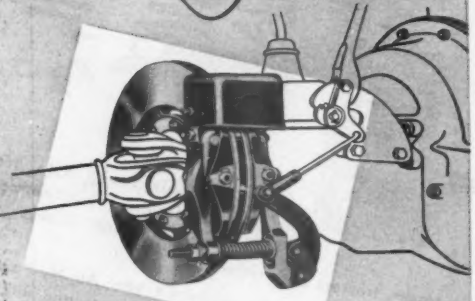

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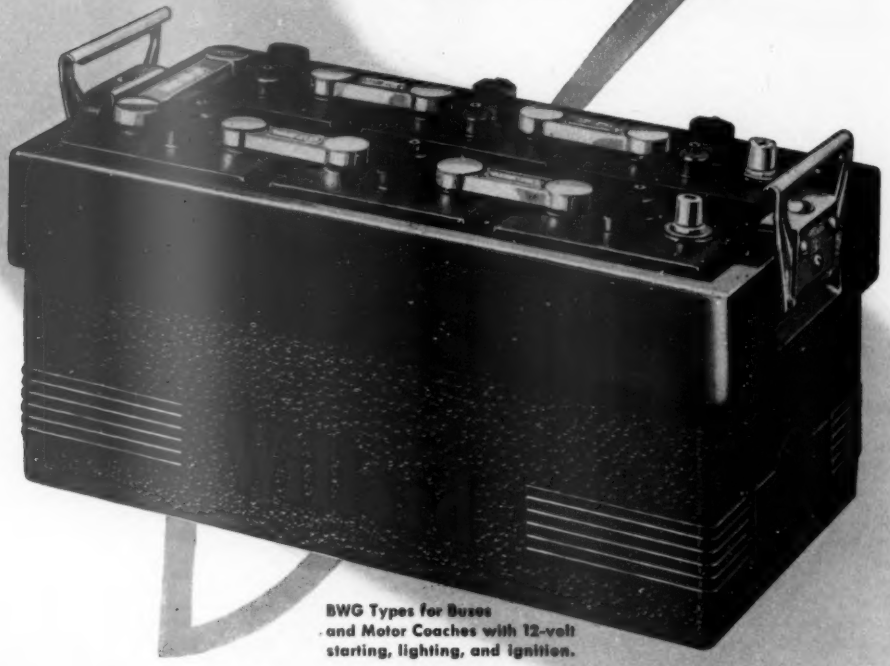

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New STANOLUBE HD-M Motor Oil offers these two properties in addition to the same qualities of corrosion resistance and freedom from foaming which helped make STANOLUBE HD a preferred lubricant for heavy-duty applications during the past nine years. To make the best use of this new and better motor oil, ask for the services of the Standard Oil lubrication specialist in your area. Phone your local Standard Oil Company (Indiana) office or write Standard Oil Company (Indiana), 910 South Michigan Ave., Chicago 80, Illinois.

A Complete Line of Motor Oils for Every Heavy-Duty Service Need

STANOLUBE HD-M is recommended for all internal combustion engines. It meets U. S. Army specification MIL-0-2104. This lubricant provides excellent cleanliness, low wear rate, and low oil consumption under severe operating conditions. Available in all SAE grades.

STANOLUBE S-1 is recommended for use in automotive, diesel, or gasoline engines where other heavy-duty oils cannot control deposits caused by operational severity or adverse fuel quality. It meets requirements of MIL-0-2104 and the requirements for "series 1" type oils as well. Available in all SAE grades.

STANOLUBE HLA is recommended for use in supercharged diesel engines and in other engines that operate under the most adverse conditions. It meets the requirements of MIL-0-2104 and the requirements of "series 2" type oils. Available in SAE 10 and SAE 30 grades.

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